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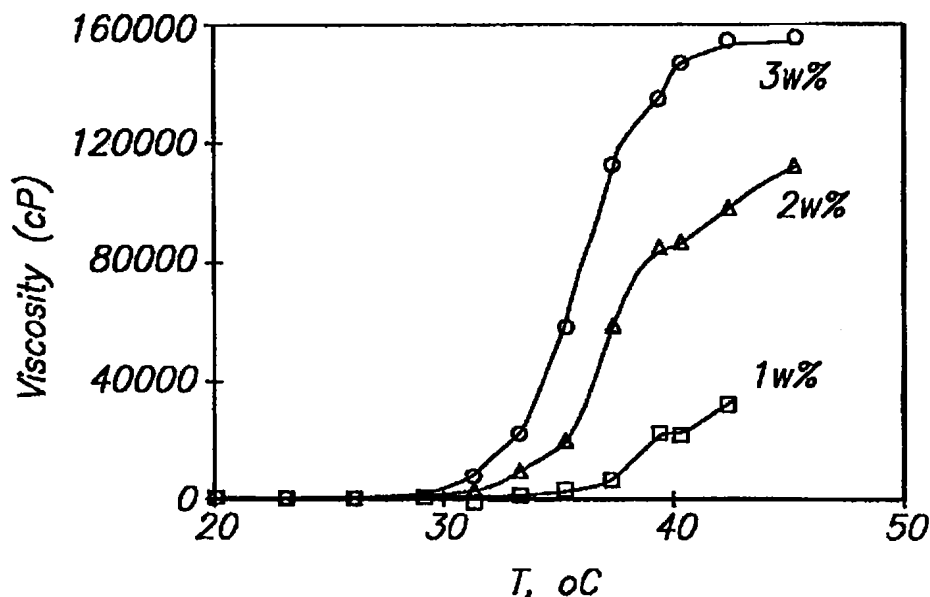
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(54) Title: COMPOSITIONS FOR COSMETIC APPLICATIONS



(57) Abstract

A cosmetic composition is described having a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.

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## COMPOSITIONS FOR COSMETIC APPLICATIONS

This application is a continuation-in-part application of copending application U.S.S.N. 60/034,805 filed January 2, 1997, and entitled "Responsive Polymer  
5 Networks and Methods of Their Use", which is a continuation-in-part application of copending application PCT/US96/10376 filed June 14, 1996, designating the United States, and entitled "Responsive Polymer Networks and Methods of Their Use", which is a continuation-in-part application of copending application U.S.S.N. 08/580, 986  
10 filed January 3, 1996, and entitled "Responsive Polymer Networks and Methods of Their Use", each of which is incorporated entirely by reference.

### Field of the Invention

The present invention relates to a cosmetic composition useful in a variety of topical and personal care products, including treatments of disorders and imperfections  
15 of the skin or other areas of the body. More particularly, the present invention is directed to a cosmetic composition comprising a poloxamer:poly(acrylic acid) polymer network that can be designed to reversibly gel over a wide range of conditions to provide a composition having a controllable range of viscosities, making it useful in a variety of cosmetic and personal care applications.

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### Background of the Invention

Many examples are known of cosmetic compositions intended for treatment of the skin or elsewhere on the body, where it is desired to have certain properties of viscosity. Hydrogels, such as cellulose, have been included as thickeners in cosmetic  
25 compositions. A hydrogel is a polymer network which absorbs a large quantity of water without the polymer dissolving in water. The hydrophilic areas of the polymer chain absorb water and form a gel region. The extent of gelation depends upon the volume of the solution which the gel region occupies.

Reversibly gelling solutions are known in which the solution viscosity increases  
30 and decreases with an increase and decrease in temperature, respectively. Such

reversibly gelling systems are useful wherever it is desirable to handle a material in a fluid state, but performance is preferably in a gelled or more viscous state.

A known material with these properties is a thermal setting gel using block copolymer polyols, available commercially as Pluronic® polyols (BASF, Ludwigshafen, Germany), which is described in U.S. Patent No. 4, 188, 373. Adjusting the concentration of the polymer gives the desired liquid-gel transition. However, concentrations of the polyol polymer of at least 18-20% by weight are needed to produce a composition which exhibits such a transition at commercially or physiologically useful temperatures. Also, solutions containing 18-20% by weight of responsive polymer are typically very viscous even in the "liquid" phase, so that these solutions can not function under conditions where low viscosity, free-flowing is required prior to transition. In addition, these polymer concentrations are so high that the material itself may cause unfavorable interactions during use.

Another known system which is liquid at room temperature, but forms a semi-solid when warmed to about body temperature is formed from tetrafunctional block polymers of polyoxyethylene and polyoxypropylene condensed with ethylenediamine, commercially available at Tetronic® polyols. These compositions are formed from approximately 10% to 5-% by weight of the polyol in an aqueous medium. See, U.S. Patent No. 5,252,318.

Joshi, et al. in U.S. Patent No. 5,252,318 reports reversible gelling compositions which are made up of a physical blend of a pH-sensitive gelling polymer (such as a cross-linked poly(acrylic acid) and a temperature-sensitive gelling polymer (such as methyl cellulose or block copolymers of poly(ethyleneoxide) and poly(propyleneoxide)). In compositions including methylcellulose, 5- to 8-fold increases in viscosity are observed upon a simultaneous change in temperature and pH for very low methylcellulose levels (1-4% by weight). See, Figs. 1 and 2 of Joshi, et al. In compositions including Pluronic® and Tetronic® polyols, commercially available forms of poly(ethyleneoxide)/poly(propyleneoxide) block copolymers, significant increases in viscosity (5- to 8-fold) upon a simultaneous change in temperature and pH are observed only at much higher polymer levels. See, Figs. 3-6 of Joshi, et al.

Hoffman, et al. in WO95/24430 disclose block and graft copolymers comprising a pH-sensitive polymer component and a temperature-sensitive polymer component. The block and graft copolymers are well-ordered and contain regularly repeating units of the pH-sensitive and temperature-sensitive polymer components. The copolymers are described as having a lower critical solution temperature (LCST), at which both solution-to-gel transition and precipitation phase transition occur. Thus, the transition to a gel is accompanied by the clouding and opacification of the solution. Light transmission is reduced, which may be undesirable in many applications, where the aesthetic characteristics of the composition are of some concern.

Thus, the known systems which exhibit reversible gelation are limited in that they require large solids content and/or in that the increase in viscosity is less than 10-fold. In addition, some known systems exhibit an increase in viscosity which is accompanied with the undesirable opacification of the composite.

#### Summary of the Invention

It is an object of the present invention to provide a cosmetic composition which includes a component capable of reversible gelation or viscosification.

It is a further object of the invention to provide a cosmetic composition which includes an ingredient capable of gelation or viscosification at very low solids content.

It is another object of the present invention to provide a cosmetic composition which possesses improved flow and gelation characteristics as compared to properties possessed by conventional reversible gelation compositions.

It is a further object of the invention to provide a polymer network composition for use in cosmetic compositions useful as a surfactant or emulsifier in the solubilization of additives and, in particular, hydrophobic additives.

It is a further object of the invention to provide a cosmetic composition which possesses the appropriate thickness, emolliency and cosmetic effect with a minimum of solids content.

It is a further object of the invention to provide a polymer network for use in cosmetic compositions useful as a suspending agent for otherwise insoluble additives.

It is yet a further object of the present invention to provide a composition capable of solubilizing emulsions at elevated temperatures.

It is yet a further object of the invention to provide new and useful cosmetic compositions incorporating the reversibly gelling polymer network composition of the present invention, which take advantage of its unique advantageous properties.

It is yet another object of the present invention to provide reversibly gelling polymer network compositions which are composed of biocompatible polymers.

These and other objects of the invention are achieved with a cosmetic compositions which incorporates a poloxamer:poly(acrylic acid) polymer network as a cosmetically acceptable carrier. The polymer network comprises a poloxamer component randomly bonded to a poly(acrylic acid), or PAA, component in and aqueous-based medium, the polymer network being capable of aggregating in response to an increase in temperature. The reverse thermal viscosifying poloxamer:poly(acrylic acid) polymer network includes random covalent bonding between the poly(acrylic acid) component and the poloxamer component of the network. The polymer network may also include some unbound or "free" poloxamer or other additives which contribute to or modify the characteristic properties of the polymer composition.

In addition, the cosmetic composition includes a cosmetic agent selected to provide a preselected cosmetic effect. By "cosmetic agent", as that term is used herein, it is meant that the additive imparts a cosmetic effect. A cosmetic effect is distinguishable from a pharmaceutical effect in that a cosmetic effect relates to the promoting bodily attractiveness or masking the physical manifestation of a disorder or disease. In contrast, a pharmaceutical seeks to treat the source or symptom of a disease or physical disorder. It is noted however, that the same additives may have either a cosmetic or pharmaceutical effect, depending upon the amounts used and the manner of administration.

By "cosmetic", as that term is used herein, it is meant the cosmetic and personal-care applications intended to promote bodily attractiveness or to cover or mask the physical manifestations of a disorder or disease. Cosmetics include those products subject to regulation under the FDA cosmetic guidelines, as well as sunscreen products,

acne products, skin protectant products, anti-dandruff products, and deodorant and antiperspirant products.

By "gelation" or viscosification, as that term is used herein, it is meant a drastic increase in the viscosity of the polymer network solution. Gelation is dependent on the initial viscosity of the solution, but typically a viscosity increase in the range of 2- to 100-fold, and preferably 5- to 50-fold, and more preferably 10- to 20-fold is observed in the polymer network which is used in the preparation of the cosmetic compositions of the invention. Such effects are observed in a simple polymer network solution and the effect may be modified by the presence of other components in the cosmetic composition.

By "reversibly gelling" as that term is used herein, it is meant that the process of gelation takes place upon an *increase* in temperature rather than a decrease in temperature. This is counter-intuitive, since it is generally known that solution viscosity *decreases* with an increase in temperature.

As used herein, "poloxamer" is a triblock copolymer derived from poly(ethyleneoxide)-poly(propyleneoxide)-poly(ethyleneoxide) blocks. The poloxamer is capable of responding to a change in temperature by altering its degree of association and/or agglomeration. The aggregation may be in the form of micelle formation, precipitation, labile cross-linking or other factors. The poloxamer has the general formula of a triad ABA block copolymer,  $(P_1)_a(P_2)_b(P_1)_a$  where  $P_1$  = poly(ethyleneoxide) and  $P_2$  = poly(propyleneoxide) blocks, where a is in the range of 10-50 and where b is in the range of 50-70.

The poly(acrylic acid) component includes poly(acrylic acid) and its salts. The poly(acrylic acid) supports and interacts with the poloxamer component so that a multi-material, responsive polymer network is formed. The interaction of the poloxamer and poly(acrylic acid) exhibits a synergistic effect, which magnifies the effect of the poloxamer component in viscosifying and/or gelling the solution.

The novel interaction between the constituent polymers components of the polymer network permits formation of gels at very low solids content. Gelation and/or viscosification is observed in aqueous solutions having about 0.01 to 20 wt% of the

poloxamer component and about 0.01 to 20 wt% of the poly(acrylic acid) component. A typical reversibly gelling polymer network may be comprised of less than about 4 wt% of total polymer solids (e.g., poloxamer and poly(acrylic acid)) and even less than 1 wt% total polymer solids while still exhibiting reverse thermal viscosification. Of course, the total solids content including additives of a reversibly gelling polymer network composition may be much higher. The viscosity of the gel increases at least ten-fold with an increase in temperature of about 5°C at pH 7 and 1 wt% polymer. Viscosity increases may be even greater over a larger temperature range at pH 7 and 1% polymer network content.

The relative proportion of poloxamer and poly(acrylic acid) may vary dependent upon the desired properties of the polymer composition. In one embodiment, the poloxamer is present in a range of about 1 to 20 wt% and the poly(acrylic acid) is present in a range of about 99 to 80 wt%. In another embodiment, the poloxamer component is present in a range of about 79 to 60 wt%. In another embodiment, the poloxamer component is present in a range of about 41 to 50 wt%. In another embodiment, the poloxamer component is present in a range of about 51 to 60 wt% and the poly(acrylic acid) component is present in a range of about 49 to 40 wt%. In yet another embodiment, the poloxamer component is present in a range of about 61 to 90 wt% and the poly(acrylic acid) component is present in a range of about 39 to 20 wt%. In another embodiment, the poloxamer component is present in a range of about 81 to 99 wt% and the poly(acrylic acid) component is present in a range of about 10 to 1 wt%.

The poloxamer:poly(acrylic acid) polymer network described above is included in a cosmetic composition to improve the flow characteristics, thickness and other properties of the composition. The composition includes additional cosmetic agents, such as are needed for the cosmetic purpose of the composition. Additives also may be included to modify the polymer network performance, such as to increase or decrease the temperature of the liquid-to-gel transition and/or to increase or decrease the viscosity of the responsive polymer composition.



In one aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic composition to impart thickening properties to the cosmetic composition at the use and/or application temperature. Such thickening properties include enhanced overall viscosity, as well as a desirable viscosity response with temperature. The polymer network may be useful as a thickener in pH ranges where other thickeners are not effective.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network is incorporated into a cosmetic composition to stabilize and solubilize hydrophobic agents in the cosmetic composition. The polymer network may be included to increase emulsion stability. Many emulsions, i.e., suspension of small droplets or particles of a first material in a second material, lose viscosity upon heating. As will be demonstrated herein, the poloxamer:poly(acrylic acid) polymer network retains its emulsifying properties even with temperature increase.

In addition, it may be included in the composition to impart emolliency to the composition. The composition may also act as a film-forming agent after it has been applied to the skin. This film-forming agent may be used as a barrier to prevent water loss from the skin which contributes to the moisturization of the skin.

In another aspect of the invention, the poloxamer:poly(acrylic acid) polymer network may be included as an additive in cosmetic applications to prevent viscosity loss at elevated temperatures.

#### Brief Description of the Drawing

The invention is described with reference to the Drawing, which is presented for the purpose of illustration and is in no way intended to be limiting, and in which:

FIG. 1 is a graph of viscosity vs. temperature for a 1 wt%, 2 wt%, and 3 wt% responsive polymer network aqueous composition of a poloxamer:poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate of  $0.44 \text{ sec}^{-1}$ ;

FIG. 2 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition demonstrating reversibility of the viscosity response;

FIG. 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates;

FIG. 4 shows a viscosity response curve for a 2 wt% poloxamer:poly(acrylic acid) polymer network composition prepared with nominal mixing and stirring and prepared using high shear homogenization (8000 rpm, 30 min);

FIG. 5 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition at various pHs;

FIG. 6 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition with and without addition of 0.25 wt% KCl;

FIG. 7 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition with and without addition of 0.5 wt% acetamide MEA;

FIG. 8 is a graph of viscosity vs. temperature for a 1 wt% poloxamer:poly(acrylic acid) polymer network composition without and with 5 wt%, 10 wt% and 20 wt% added ethanol, respectively;

FIG. 9 is an illustration of a reversibly gelling polymer network used as an emulsifier and stabilizer for a hydrophobic agent;

FIG. 10 is a schematic illustration of the poloxamer:poly(acrylic acid) polymer network below and above the transition temperature illustrating the aggregation of the hydrophobic poloxamer regions;

FIG. 11 is a graph of viscosity vs. pH for a 1 wt% responsive polymer network aqueous composition of a poloxamer/poly(acrylic acid) (1:1) measured at a shear rate of  $0.44 \text{ sec}^{-1}$ ;

FIG. 12 is a plot of viscosity vs. temperature for (a) a 1 wt% responsive polymer network aqueous composition of Pluronic® F127 poloxamer:poly(acrylic acid) (1:1) and (b) a 1 wt% physical blend of Pluronic® F127 poloxamer:poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate  $0.22 \text{ sec}^{-1}$ ;

FIG. 13 is a plot of viscosity vs. temperature for a 1 wt% responsive polymer network aqueous composition of Pluronic® F88 poloxamer:poly(acrylic acid) (1:1) in deionized water at pH 7.0 measured at shear rate of 22 sec<sup>-1</sup>;

5 FIG. 15 is a plot of viscosity vs. temperature for a responsive polymer network composition of 2 wt% Pluronic® F123 poloxamer:poly(acrylic acid) (1:1) at pH 7.0 measured at a shear rate of 22 sec<sup>-1</sup>;

FIG. 16 is a plot of viscosity vs. temperature for 1 wt% made of series of poloxamers and poly(acrylic acid) (1:1) in deionized water at a shear rate of 132 sec<sup>-1</sup>;

10 FIG. 17 is a plot showing release of hemoglobin from a poloxamer:poly(acrylic acid) polymer network of the invention;

FIG. 18 is a plot showing the release of lysozyme from the poloxamer:poly(acrylic acid) polymer complex of the invention;

FIG. 19 is a plot showing release of insulin from a poloxamer:poly(acrylic acid) polymer network composition of the invention;

15 FIG. 20 is a plot of viscosity vs. temperature for a poloxamer:poly(acrylic acid) polymer network composition (a) before and (b) after sterilization by autoclave;

FIG. 21 is a plot of viscosity vs. temperature for an oil-free moisturizing formulation prepared from (a) a responsive polymer network composition of the invention and (b) a convention oil-in-water formulation;

20 FIG. 22 is a plot of equilibrium solubility of estradiol (A, B) and progesterone (C, D) in aqueous solutions (pH 7) of Pluronic® F127 (A, C) and responsive polymer network (B, D) vs. temperature;

FIG. 23 is a plot of the ratio of equilibrium solubilities of estradiol in responsive polymer network and water vs. polymer concentration in the responsive polymer network solutions;

FIG. 24 is a plot of the effect of loading fluorescein on the onset of gelation of responsive polymer network vs. total polymer concentration in responsive polymer network solution (pH 7.0);

30 FIG. 25 is a plot of the percentage of (a) estradiol and (b) progesterone release from responsive polymer network vs. time;

FIG. 26 is a plot of the rate of progesterone release and macroscopic viscosity vs. polymer concentration;

FIG. 27 is a plot of the percentage of progesterone release vs. polymer concentration in responsive polymer network; and

5        FIG. 28 is a plot of the relative diffusivity of poly(styrene) latex particles in water and responsive polymer network.

### Detailed Description of the Invention

The present invention is directed to a cosmetic composition comprising a  
10        cosmetically acceptable carrier comprising a novel poloxamer:poly(acrylic acid)  
polymer network. The polymer network functions as a temperature sensitive thickening  
agent, and in addition possesses surfactant and emulsifying capabilities which may be  
beneficial to the cosmetic composition. The polymer network composition according to  
the invention includes a poloxamer component randomly bonded to a poly(acrylic acid)  
15        component. The two polymer component may interact with one another on a molecular  
level. The polymer network contains about 0.01 - 20 wt% each of poloxamer and  
poly(acrylic acid). Exemplary polymer network compositions range from about 1:10 to  
about 10:1 poloxamer:poly(acrylic acid). Polymer network gel compositions which  
exhibit a reversible gelation at body temperature (25-40°C) and/or at physiological pH  
20        (ca. pH 3.0-9.0) and even in basic environment up to pH 13 (hair care) are particularly  
preferred for cosmetic applications.

In one embodiment of the invention, a 1:1 poloxamer:poly(acrylic acid) polymer  
network at appropriate pH exhibits flow properties of a liquid at about room  
temperature, yet rapidly thickens into a gel consistency of at least about five times  
25        greater, preferably at least about 10 times greater, and even more preferably at least  
about 30 times and up to 100 times greater, viscosity upon increase in temperature of  
about 10°C and preferably about 5°C. The reversibly gelling polymer network of the  
present invention exhibit gelation even at very low polymer concentrations. For  
example, polymer network compositions at pH 7 comprising about 0.5 wt% poloxamer  
30        component and about 0.5 wt% PAA exhibits a significant increase in viscosity from a

free-flowing liquid (50 cps) to a gel (6000 cps). The observed gelation takes place at low solids contents, such as less than 20 wt% or preferably less than about 10 wt%, or more preferably less than about 2.5 wt% or most preferably less than about 0.1 wt%. Thus, only a small amount by weight of the polymer network need be incorporated into a cosmetic composition in order to provide the desired thickening or viscosifying effect.

The reverse viscosification effect at low polymer concentrations provides clear, colorless gels which are particularly well-suited to cosmetic applications. For example, very little residue is formed upon dehydration which may be important in some applications, such as in topically applied cosmetics. An additional advantage of the polymer network of the invention is that it remains clear and translucent above and below the critical temperature or pH. These characteristics of the reversibly gelling polymer network make it well suited for use in cosmetic compositions.

The polymer network of the present invention technology may be added to cosmetic formulations to increase the thickness and viscosity of the composition. The poloxamer:poly(acrylic acid) polymer network possesses hydrophobic regions capable of aggregation. Unlike conventional thickeners, the aggregation of the polymer network of the present invention is temperature sensitive. Thus the inventive polymer network of the present invention may have a transition temperature (i.e., temperature of aggregation) above room temperature so that the cosmetic composition is of low viscosity at or below room temperature and is of high viscosity at or around body temperature (body temperature includes both surface and internal body temperature). Thus, a composition may be prepared at low temperatures while the polymer network is in a low viscosity state. Mixing of ingredients under low viscosity is expected to be easier, thus simplifying the manufacturing process. Yet, the resultant mixture would be of increased viscosity at use temperatures. As a further advantage, a cosmetic composition comprising poloxamer:poly(acrylic acid) polymer network may be spread thinly to allow for even application, due to its low viscosity at room temperature, but will thicken and "fill" the skin contours upon warming up to body surface temperature.

In another aspect of the invention, the composition may be applied through a nozzle that provides high shear to reduce viscosity, yet the composition regains its

viscosity after application to the skin. This contrasts with conventional formulations which permanently lose viscosity after being subjected to high shear.

In another aspect of the invention, the composition may be formulated and applied as a liquid, spray, semi-solid gel, cream, ointment, lotion, stick, roll-on  
5 formulation, mousse, pad-applied formulation, and film-forming formulation.

The poloxamer:poly(acrylic acid) polymer network may also be included in a cosmetic composition for use as a stabilizing, solubilizing or emulsifying agent for a hydrophobic component of the cosmetic formulation. The strong hydrophilic regions of the poloxamer resulting from aggregation and micelle formation create hydrophobic  
10 domains which may be used to solubilize and control release of hydrophobic agents. Similar micelle-based systems have been shown to protect trapped peptides against enzymatic degradation from surface enzymes.

The reversibly gelling polymer network of the present invention is a unique polymer composition designed to abruptly change its physical characteristics or the  
15 characteristics and properties of materials mixed therewith with a change in temperature. Without intending to be bound by any particular mechanism or chemical structure, it is believed that the structure of the polymer network involves a random bonding of the poloxamer onto the backbone of the poly(acrylic acid). A portion of the poloxamer which is present during the polymerization reaction which forms the  
20 poly(acrylic acid) is bonded to the backbone of the forming poly(acrylic acid) through hydrogen abstraction and subsequent reaction. See detailed discussion of the mechanism, below. The combination of the poly(acrylic acid) and randomly bonded poloxamer gives the composition its unique properties. Any free poloxamer remaining after polymerization of PAA remains associated with the random co-polymer, resulting  
25 in a miscible composition. Free poloxamer may also be present in the polymer network composition; however, its presence is not required in order to observe reverse thermal viscosification.

The poly(acrylic acid) may be linear, branched and/or cross-linked. Poly(acrylic acid) is capable of ionization with a change in pH of the solution. By  
30 ionization, as that term is used with respect to poly(acrylic acid), it is meant the

formation of the conjugate base of the acrylic acid, namely acrylate. As used herein, poly(acrylic acid) includes both ionized and non-ionized versions of the polymer.

Changes in ionic strength may be accomplished by a change in pH or by a change in salt concentration. The viscosifying effect of the polymer network is partly a function of the ionization of the poly(acrylic acid); however, reverse thermal gelling may occur without ionization. Changes to the ionic state of the polymer causes the polymer to experience attractive (collapsing) or repulsive (expanding) forces. Where there is no need or desire for the composition to be applied in a high viscosity state, it may be possible to prepare the composition as non-ionized poly(acrylic acid). The body's natural buffering ability will adjust the pH of the applied composition to ionize the poly(acrylic acid) and thereby develop its characteristic viscosity.

The poloxamer possesses regions of hydrophobic character, e.g., poly(propyleneoxide) blocks, and hydrophilic character, e.g., poly(ethyleneoxide) blocks. The poloxamer may be linear or branched. Suitable poloxamers include triad block copolymers of poly(ethyleneoxide) and poly(propyleneoxide) having the general formula  $(P_1)_a(P_2)_b(P_1)_a$ , where  $P_1$  = poly(ethyleneoxide), and  $P_2$  = poly(propyleneoxide) blocks, where a is in the range of 10-50 and where b is in the range of 50-70, where poly(propyleneoxide) represents the hydrophobic portion of the polymer and poly(ethyleneoxide) represents the hydrophilic portion of the polymer.

Pluronic® polymers (BASF) are commercially available for (a) in the range of 16 to 48 and (b) ranging from 54-62. One or more poloxamers may be used in the reversibly gelling polymer network composition of the present invention.

The reversibly gelling responsive polymer networks compositions of the present invention are highly stable and do not exhibit any phase separation upon standing or upon repeated cycling between a liquid and a gel state. Samples have stood at room temperature for more than three months without any noticeable decomposition, clouding, phase separation or degradation of gelation properties. This is in direct contrast to polymer blends and aqueous mixed polymer solutions, where phase stability and phase separation is a problem, particularly where the constituent polymers are immiscible in one another.

And example of the dramatic increase in viscosity and of the gelation of the reversibly gelling polymer network compositions of the invention is shown in Figure 1. Figure 1 is a graph of viscosity vs. temperatures for 1 wt%, 2 wt%, and 3 wt% polymer network compositions comprising 1:1 poloxamer:poly(acrylic acid) hydrated and neutralized. The viscosity measurements were taken on a Brookfield viscometer at a shear rate of  $0.44 \text{ sec}^{-1}$  at pH 7.0. All solutions had an initial viscosity of about 1080 cP and exhibited a dramatic increase in viscosity to gel point at about  $35^{\circ}\text{C}$ . This is not typical of all polymer network compositions since polymerization condition will affect initial viscosity. Final viscosities were approximately 33,000 cP, 100,000 cP and 155,000 cP for the 1 wt%, 2 wt% and 3 wt% compositions, respectively. This represents viscosity increases of about 30-, 90- and 140-fold, respectively. This effect is entirely reversible. Upon cooling, the composition regains its initial viscosity. This is demonstrated in Figure 2, where a 1 wt% poloxamer:poly(acrylic acid) composition is warmed through the transition temperature up to  $35^{\circ}\text{C}$  (simple curve), cooled to room temperature ( $24^{\circ}\text{C}$ , ticked curve) and then warmed again up to above the transition temperature (open box curve). The viscosity response was virtually identical in all three instances.

As would be expected with a non-Newtonian system, the solution viscosity differs with different shear rates. Figure 3 shows the viscosity response of a 2 wt% poloxamer:poly(acrylic acid) polymer composition at various shear rates. The viscosity response is consistent between  $24^{\circ}\text{C}$  and  $34^{\circ}\text{C}$ ; however, the final viscosity is reduced with increasing shear rate.

However, unlike many prior art hydrogels, e.g., carbomers, the poloxamer:poly(acrylic acid) polymer network composition does not permanently lose viscosity after being subjected to high shear conditions. The poloxamer:poly(acrylic acid) polymer network composition remains unaffected by such shear conditions as homogenization. Figure 4 compares the viscosity response curve of a 2 wt% poloxamer:poly(acrylic acid) polymer composition prepared with nominal mixing (simple line) and stirring with that of a polymer composition of similar composition



prepared using high shear homogenization designated by a ticked line (8000 rpm, 30 min). No significant decrease in viscosity is observed.

A number of factors influence the viscosity and transition temperature of the composition. The more important factors include polymer concentration, pH, and presence and nature of additives.

The effect of pH on the viscosity of reversibly gelling polymer networks is shown in Figure 5. Increasing pH from the starting pH has a lesser effect on the viscosity than decreasing the pH. This may relate to the extent of ionization of the poly(acrylic acid) component of the polymer network as discussed above. This may be clearly seen in Figure 5 when comparing the viscosity response of a 1 wt% poloxamer:poly(acrylic acid) polymer composition at pH 5 and pH 11. Satisfactory viscosities can be obtained at high pHs indicating the potential value of the reversibly gelling polymer network in products such as depilatories, hair straighteners and hair relaxers.

The responsive polymer network may also include additives for influencing the performance of the polymer composition, such as the transition temperature and the viscosity of the polymer composition above the transition temperature. The following list is not intended to be exhaustive but rather illustrative of the broad variety of additives which can be used.

These materials include solvents (e.g., 2-propanol, ethanol, acetone, 1,2-pyrrolidinone, N-methylpyrrolidinone), salts (e.g., calcium chloride, sodium chloride, potassium chloride, sodium or potassium phosphates, borate buffers, sodium citrate), preservatives (benzalkonium chloride, phenoxyethanol, sodium hydroxymethylglycinate, ethylparaben, benzoyl alcohol, methylparaben, propylparaben, butylparaben, Germaben II), humectant/moisturizers (acetamide MEA, lactimide MEA, hydrolyzed collagen, mannitol, panthenol, glycerin), lubricants (hyaluronic acid, mineral oil, PEG-60-lanolin, PPG-12-PEG-50-lanolin, PPG-2 myristyl ether propionate) and surfactants.

Surfactants may be divided into three classes: cationic, anionic, and non-ionics.

An example of a cationic surfactant used is ricinoleamidopropyl ethyldimonium

ethosulfate (Lipoquat R). Anionic surfactants include sodium dodecyl sulfate and ether sulfates such as Rhodapex CO-436. Nonionic surfactants include Surfynol CT-111, TG, polyoxyethylene sorbitan fatty acid esters such as Tween 65 and 80, sorbitan fatty acid esters such as Span 65, alkylphenol ethoxylates such as Igepal CO-210 and 430, dimethicone copolyols such as Dow Corning 190, 193, and Silwet L7001.

The addition of polymers has been studied including xanthan gum, cellulose derivatives such as hydroxyethylcellulose (HEC), carbomethoxycellulose (CMC), lauryldimonium hydroxypropyl oxyethyl cellulose (Crodacel QL), hydroxypropylcellulose (HPC), and hydroxypropylmethylcellulose (HPMC), poly(acrylic acid), cyclodextrins, methyl acrylamido propyl triammonium chloride (MAPTAC), polyethylene oxide, polyvinylpyrrolidone, polyvinyl alcohol, and propylene oxide/ethylene oxide random copolymers. Poloxamers may also be used as additives. Examples include both the Pluronic® polyols having an  $(P_1)_a(P_2)_b(P_1)_a$  structure such as Pluronic® F38, L44, P65, F68, F88, L92, P103, P104, P105, F108, L122, and F127, as well as the reverse Pluronic® R series  $(P_2)_a(P_1)_b(P_2)_a$  structure such as Pluronic® 17R2 and 25R8. Other miscellaneous materials include propyleneoxide, urea, triethanolamine, alkylphenol ethoxylates (Iconol series), and linear alcohol alkoxyates (Plurafac series).

Additives affect the viscosity of the compositions differently depending upon the nature of the additive and its concentration. Some additives will affect the initial or final viscosity, whereas others will affect the temperature range of the viscosity response, or both.

Potassium chloride and acetamide MEA are two examples of additives which decrease the final viscosity of the composition (see Example 30). KCl (0.25%) added to a 1 wt% reversibly gelling polymer composition reduces the viscosity by about 3000 cps. See Figure 6. The humectant, acetamide MEA, lowers the viscosity of a 1 wt% solution by approximately 1,500 cps (see Figure 7).

Glycerin, ethanol and dimethicone copolymer have been shown to affect the temperature range over which the viscosity response occurs. Glycerin shifts the transition temperature to a slightly lower range from an initial 24-34°C to about 24-30°C, but does not affect the final viscosity (see Example 44). The effect of ethanol on

the viscosity is different at different concentration levels. At 5 wt% and 10 wt% added ethanol, the transition temperature is shifted to lower ranges, e.g., 24-29°C and 20-29°C, respectively. At 20 wt% added ethanol, the composition not only exhibits a lowering of the transition temperature, but also a marked increase in initial and final viscosity. See Figure 8. Dimethicone copolymer (1 wt%) also changed the transition temperature, but in this instance the transition temperature range was raised to 28-41°C. Thus, proper selection of additives permits the formulator to adjust the transition temperature to various ranges.

Those skilled in the art will appreciate that the polymer network compositions of the present invention may be utilized for a wide variety of cosmetic and personal care applications. To prepare a cosmetic composition, an effective amount of cosmetically active agent(s) which imparts the desirable cosmetic effect is incorporated into the reversibly gelling polymer network composition of the present invention. Preferably the selected agent is water soluble, which will readily lend itself to a homogeneous dispersion throughout the reversibly gelling polymer network composition; however, the polymer network has been demonstrated to significantly solubilize or suspend hydrophilic agents in order to improve formulation homogeneity (see Example 36). It is also preferred that the agent(s) is nonreactive with the polymer network composition. For materials which are not water soluble, it is also within the scope of the invention to disperse or suspend powders or oil (lipophilic materials) throughout the polymer network composition. It will also be appreciated that some applications may require a sterile environment. It is contemplated as within the scope of the invention that the reversibly gelling polymer network compositions of the present invention may be prepared under sterile conditions. An additional feature of the reversibly gelling polymer composition is that it is prepared from constituent polymers that have known accepted toxicological profiles.

The poloxamer:poly(acrylic acid) polymer network has been evaluated under Good Laboratory Practice (GLP) standard protocols known in the art for toxicity in animal models and found to exhibit no toxic effects. The results of the toxicity study

are summarized in the following Table 1. The non-toxicity of the polymer network makes it an ideal candidate for use in cosmetic compositions.

Table 1. Toxicity data for 6% poloxamer:poly(acrylic acid) solution at pH 7.

Reaction Tests	Mode of Testing	Results
Skin sensitization	guinea pig - topical	not a sensitizer
Eye irritation	rabbit - eye instillation	negative
Primary dermal irritation	rabbit - topical	very slight edema (1 on a scale of 1-8)
Acute dermal toxicity	rat - single dose (2g/kg)	no toxicity
Acute oral toxicity	rat - single dose (5g/kg)	no toxicity
AMES test		negative

Exemplary cosmetic and personal care applications, for which the reversibly gelling polymer network composition may be used include, but are not limited to, baby products, such as baby shampoos, lotions, powders and creams; bath preparations, such as bath oils, tablets and salts, bubble baths, bath fragrances and bath capsules; eye makeup preparations, such as eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover and mascara; fragrance preparations, such as colognes and toilet waters, powders and sachets; noncoloring hair preparations, such as hair conditioner, hair spray, hair straighteners, permanent waves, rinses, shampoos, tonics, dressings and other grooming aids; color cosmetics; hair coloring preparations such as hair dye, hair tints, hair shampoos, hair color sprays, hair lighteners and hair bleaches; makeup preparations such as face powders, foundations, leg and body paints, lipstick, makeup bases, rouges and makeup fixatives; manicuring preparations such as basecoats and undercoats, cuticle softeners, nail creams and lotions, nail extenders, nail polish and enamel, and nail polish and enamel remover; oral hygiene products such as dentrifices and mouthwashes; personal cleanliness, such as bath soaps and detergents, deodorants, douches and feminine hygiene products; shaving preparations such as aftershave lotion, beard softeners, men's talcum, shaving cream, shaving soap and preshave lotions; skin care preparations such as cleansing preparations, skin antiseptics, depilatories, face and

neck cleansers, body and hand cleansers, foot powders and sprays, moisturizers, night preparations, paste masks, and skin fresheners; and suntan preparations such as suntan creams, gels and lotions, indoor tanning preparations.

Preparation of the above-named cosmetic compositions and others may be accomplished with reference to any of the cosmetic formulation guidebooks and industry journals which are available in the cosmetic industry. These references supply standard formulations which may be modified by the addition or substitution of the reversible viscosifying polymer network of the present invention into the formulation. Suitable guidebooks include Cosmetics and Toiletries Magazine, Vo. 111 (March, 1996); Formulary: Ideas for Personal Care, Croda, Inc., Parsippany, NJ (1993); and Cosmeticon: Cosmetic Formulary, BASF, which are hereby incorporated in their entirety by reference.

The cosmetic composition may be in any form. Suitable forms include but are not limited to lotions, creams, sticks, roll-on formulations, mousses, aerosol sprays, pad-applied formulations, and film-forming formulations.

As those skilled in the art will appreciate, the foregoing list is exemplary only. Because the reversibly gelling polymer network composition of the present invention is suited for application under a variety of physiological conditions, a wide variety of cosmetically active agents may be incorporated into and administered from the polymer network composition. In addition to the poloxamer:poly(acrylic acid) polymer network, additional cosmetically acceptable carriers may be included in the composition, such as by way of example only, emollients, surfactant, humectants, powders and other solvents. By way of example only, the cosmetic composition also may include additional components, which serve to provide additional aspects of the cosmetic affect or to improve the stability and/or administration of the cosmetic. Such additional components include, but are not limited to, preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, antiperspirants, antiseptics, antistatic agents, astringents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents,

conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture  
5 barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers, powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators,  
10 thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or fragrances. Suitable materials which serve the additive functions listed here are well known in the cosmetic industry. a listing of the additive function and materials suitable for incorporation into the cosmetic composition may be found in Appendix A, which is appended hereto at the end of the specification. Further information may be obtained  
15 by reference to The Cosmetic Bench Handbook, Cosmetics & Toiletries, C.C. Urbano, editor, Allured Publ. Corp., 1996, which is hereby incorporated in its entirety by reference.

A brief description of some preferred additives and cosmetically active agents follows. The compositions of the invention include a safe and effective amount of a  
20 cosmetically active agent. "Safe and effective", as it is used herein, means an amount high enough to significantly positively modify the condition to be treated or the cosmetic effect to be obtained, but low enough to avoid serious side effects.

Preservative can be desirably incorporated into the cosmetic compositions of the invention to protect against the growth of potentially harmful microorganisms. Suitable  
25 preservatives include, but are not limited to, alkyl esters of parahydroxybenzoic acid, hydantoin derivatives, parabens, propionate salts, triclosan tricarbonyl, tea tree oil, alcohols, farnesol, farnesol acetate, hexachlorophene and quaternary ammonium salts, such as benzaldehyde, and a variety of zinc and aluminum salts. Cosmetic chemists are familiar with appropriate preservatives and may select that which provides the

required product stability. Preservatives are preferably employed in amounts ranging from about 0.0001% to 2% by weight of the composition.

Emollients can be desirably incorporated into the cosmetic compositions of the invention to provide lubricity to the formulation. Suitable emollients may be in the form of volatile and nonvolatile silicone oil, highly branched hydrocarbons and synthetic esters. Amounts of emollients may be in the range of about 0.1-30 wt%, and preferably about 1-20 wt%. By way of example only, suitable silicones include cyclic or linear polydimethylsiloxanes, polyalkylsiloxanes, polyalkylarylsiloxanes and polyether siloxanes. By way of example only, suitable ester emollients include alkenyl esters of fatty acids, polyhydric alcohols, such as ethyleneoxide mono and di-fatty acid esters, polyethyleneoxide and the like, ether-esters, such as fatty acid esters of ethoxylated fatty alcohols, wax esters, such as beeswax, spermaceti, myristyl myristate and stearyl stearate, and sterol esters such as cholesterol fatty acids.

A variety of oily emollients may be employed in the compositions of this invention. These emollients may be selected from one or more of the following classes:

1. Triglyceride esters such as vegetable and animal fats and oils. Examples include castor oil, cocoa butter, safflower oil, cottonseed oil, corn oil, olive oil, cod liver oil, almond oil, avocado oil, palm oil, sesame oil, squalene, Kikui oil and soybean oil;
2. Acetoglyceride esters, such as acetylated monoglycerides;
3. Ethoxylated glycerides, such as ethoxylated glyceryl monostearate;
4. alkyl esters of fatty acids having 10 to 20 carbon atoms, such as, methyl, isopropyl, and butyl esters of fatty acids, and including hexyl laurate, isohexyl laurate, isohexyl palmitate, isopropyl palmitate, decyl oleate, isodecyl oleate, hexadecyl stearate, decyl stearate, isopropyl isostearate, diisopropyl adipate, diisohexyl adipate, dihexyldecyl adipate, diisopropyl sebacate, lauryl lactate, myristyl lactate, and cetyl lactate;
5. Alkenyl esters of fatty acids having 10 to 20 carbon atoms, such as oleyl myristate, oleyl stearate, and oleyl oleate and the like;
6. Fatty acids having 10 to 20 carbon atoms, such as pelargonic, lauric, myristic, palmitic, stearic, isostearic, hydroxystearic, oleic, linoleic, ricinoleic, arachidic, behenic, and erucic acids and the like;
7. Fatty alcohols having 10 to 20 carbon atoms, such as, lauryl, myristyl, cetyl, hexadecyl, stearyl, isostearyl, hydroxystearyl, oleyl,

ricinoleyl, behenyl, erucyl, and 2-octyl dodecanyl alcohols are examples of satisfactory fatty alcohols and the like; 8. Fatty alcohol ethers, such as ethoxylated fatty alcohols of 10 to 20 carbon atoms including the lauryl, cetyl, stearyl, isostearyl, oleyl, and cholesterol alcohols, having attached thereto from 1 to 50 propylene oxide groups; 9. 5 Ether-esters such as fatty acid esters of ethoxylated fatty alcohols; 10. lanolin and derivative, such as lanolin, lanolin oil, lanolin wax, lanolin alcohols, lanolin fatty acids, isopropyl lanolate, ethoxylated lanolin, ethoxylated lanolin alcohols, ethoxylated cholesterol, propoxylated lanolin alcohols, acetylated lanolin alcohols, lanolin alcohols linoleate, lanolin alcohols ricinoleate, acetate of lanolin alcohols ricinoleate, acetate of 10 ethoxylated alcohols-esters, hydrogenolysis of lanolin, ethoxylated hydrogenated lanolin, ethoxylated sorbitol lanolin, and liquid and semisolid lanolin absorption bases and the like; 11. Polyhydric alcohol esters, such as, ethylene glycol mono and di-fatty acid esters, diethylene glycol mono- and di-fatty acid esters, polyethylene glycol (200-6000) mono- and di-fatty acid ester, propylene glycol mono- and di-fatty acid esters, 15 polypropylene glycol 2000 monooleate, polypropylene glycol 2000 monostearate, ethoxylated propylene glycol monostearate, glyceryl mono- and di-fatty acid esters, polyglycerol polyfatty esters, ethoxylated glyceryl monostearate, 1,2-butylene glycol monostearate, 1,2-butylene glycol distearate, polyoxyethylene polyol fatty acid ester, sorbitan fatty acid esters, and polyoxyethylene sorbitan fatty acid esters are satisfactory 20 polyhydric alcohol esters; 12. Waxes such as beeswax, spermaceti, myristyl myristate, stearyl stearate; 13. Beeswax derivatives, e.g., polyoxyethylene sorbitol beeswax; 14. Vegetable waxes including carnauba and candelilla waxes; 15. Phospholipids such as lecithin and derivatives; 16. Sterol including cholesterol and cholesterol fatty acid esters; 17. Amides such as fatty acid amides, ethoxylated fatty 25 acid amides, solid fatty acid alkanolamides.

Humectants may be added to the composition to increase the effectiveness of the emollient, to reduce scaling, to stimulate removal of built-up scale and improve skin feel. By way of example only, suitable humectants include polyhydric alcohols, such a glycerol, polyalkylene glycols, alkylene polyols, their derivatives, propyleneoxide, 30 dipropyleneoxide, polypropyleneoxide, polyethyleneoxide, sorbitol, hydroxypropyl



sorbitol, hexylene glycol, 1,3-butylene glycol, 1,2,6-hexanetriol, ethoxylated glycerol, propoxylated glycerol and the like. The amount of humectant may be in the range of about 0.5-30 wt% and preferably between 1-15 wt%.

In topical skin care applications, a variety of active substances may be advantageously employed. by way of example, only suitable active agents which may be incorporated into the cosmetic composition include anti-aging active substances, anti-wrinkle active substances, hydrating or moisturizing or slimming active substances, depigmenting active substances, substances active against free radicals, anti-irritation active substances, sun protective active substances, anti-acne active substances, firming-up active substances, exfoliating active substances, emollient active substances, and active substances for the treating of skin disorders such as dermatitis and the like.

By way of example only, in the case of hydration, one or more moisturizers may be used, such as glycerin or urea, in combination with one or more precursor agents for the biosynthesis of structural proteins, such as hydroxyproline, collagen peptides, and the like.

By the way of example only, in case of slimming, at least one ketolytic agent or an alpha-hydroxyacid such as a salicylic acid or 5-n-octanoicsalicylic acid may be used in combination with at least one liporegulating agent such as caffeine.

By way of example only, in the case of depigmentation, at least one keratolytic agent is used in combination with a depigmenting agent such as hydroquinone, tyrosinase inhibitor (kolic acid), kojic acid and sodium metabisulfite and the like.

By way of example only, in the case of protection against free radical agents, vitamin E (against  $\text{CO}_2$  radicals), superoxide dismutase (against  $\text{O}_2$  free radicals) and sugar and caffeine (against OH free radicals).

By way of example only, in the case of anti-aging, moisturizers, sunscreens, alpha-hydroxyacids, salicylic acid or surface restructuring agents may be used in combination with enzymes for the repair of DNA, vascular protective agents or phospholipids rich in oligoelements and polyunsaturated fatty acids.

By way of example only, in the case of anti-acne agents, keratolytics, such as salicylic acid, sulfur, lactic acid, glycolic, pyruvic acid, urea, resorcinol and N-acetylcysteine, and retinoids, such as retinoic acid and its derivatives may be used.

By way of example only, in the case of anti-inflammation, non-steroidal anti-inflammatory agents (NSAIDS) may be used, such as propionic acid derivatives, acetic acid, fenamic acid derivatives, biphenylcarboxylic acid derivatives, oxicams, including but not limited to aspirin, acetaminophen, ibuprofen, naproxen, benoxaprofen, flurbiprofen, fenbufen, ketoprofen, indoprofen, piroprofen, carprofen, and bucloxic acid and the like.

By way of example only, in the case of antibiotic and antimicrobials may be included in the composition of the invention. Antimicrobial drugs preferred for inclusion in compositions of the present invention include salts of  $\beta$ -lactam drugs, quinolone drugs, ciprofloxacin, norfloxacin, tetracycline, erythromycin, amikacin, triclosan, doxycycline, capreomycin, chlorhexidine, chlortetracycline, oxytetracycline, clindamycin, ethambutol, hexamidine isethionate, metronidazole, pentamidine, gentamicin, kanamycin, lineomycin, methacycline, methanamine, minocycline, neomycin, netilmicin, paromomycin, streptomycin, tobramycin, miconazole and amanfadine and the like.

By way of example only, in the case of sunscreen protection, suitable agents include 2-ethylhexyl p-methoxycinnamate, 2-ethylhexy N,N-dimethyl-p-aminobenzoate, p-aminobenzoic acid, 2-phenyl p-methoxycinnamate, 2-ethylhexyl octocrylene, oxybenzone, homomenthyl salicylate, octyl salicylate, 4,4'-methoxy-t-butyl dibenzoylmethen, 4-isopropyl dibenzoylmethane, 3-benzylidene camphor, 3-(4-methylbenzylidene) camphor, titanium dioxide, zinc oxide, silica, iron oxide, and mixtures thereof and the like. The sunscreens disclosed therein have, in a single molecule, two distinct chromophore moieties which exhibit different ultra-violet radiation absorption spectra. One of the chromophore moieties absorbs predominantly in the UVB radiation range and the other absorbs strongly in the UVA radiation range. These sunscreens provide higher efficacy, broader UV absorption, lower skin penetration and longer lasting efficacy relative to conventional sunscreens. Generally,

the sunscreens can comprise from about 0.5% to about 20% of the compositions useful herein. Exact amounts will vary depending upon the sunscreen chosen and the desired Sun Protection Factor (SPF). SPF is a commonly used measure of photoprotection of a sunscreen against erythema.

5 By way of example only, in the case of sunless tanning agents include, dihydroxyacetone, glyceraldehyde, indoles and their derivatives, and the like.

The composition may include cleansing surfactants. Cleansing surfactants are cationic, anionic, amphoteric or non-ionic surfactants which are water-soluble and produce a consumer-acceptable amount of foam. Non-ionic surfactants are well-known materials and have been used in cleansing compositions. Therefore, suitable non-ionic surfactants include, but are not limited to, compounds in the classes known as alkanolamides, block copolymers of ethylene and propylene, ethoxylated alcohols, ethoxylated alkylphenols, alkyl polyglycosides and mixtures thereof. In particular, the non-ionic surfactant can be an ethoxylated alkylphenol, i.e., a condensation product of an alkylphenol having an alkyl group containing from about 6 to about 12 carbon atoms in either a straight chain or branched chain configuration with ethylene oxide, the ethylene oxide being present in an amount equal to at least about 8 moles ethylene oxide per mole of alkylphenol. Examples of compounds of this type include nonylphenol condensed with about 9.5 moles of ethylene oxide per mole of phenol; dodecylphenol condensed with about 12 moles of ethylene oxide per mole of phenol; dinonylphenol condensed with about 15 moles of ethylene oxide per mole of phenol; octylphenol condensed with about ten moles of ethylene oxide per mole of phenol; and diisooctyl phenol condensed with about 15 moles of ethylene oxide per mole of phenol.

A wide variety of acids, bases, buffers, and sequestrants can be utilized to adjust and/or maintain the pH and ionic strength of the compositions useful in the instant invention. Materials useful for adjusting and/or maintaining the pH and/or the ionic strength include sodium carbonate, sodium hydroxide, hydrochloric acid, phosphoric acid, sulfuric acid, acetic acid, sodium acetate, sodium hydrogen phosphate, sodium dihydrogen phosphate, citric acid, sodium citrate, sodium bicarbonate, triethanolamine, EDTA, disodium EDTA, tetrasodium EDTA, and the like.

The polymer network may be useful as a solubilization agent in cosmetic and personal care applications. A self-assembling system comprising the reversibly gelling polymer network exhibits thermogelation, pH sensitivity, and the ability to solubilize hydrophobic agents in aqueous media. When poloxamer is copolymerized with poly(acrylic acid) (PAA) according to the invention, the resulting copolymer network is bioadhesive and can be applied in a number of therapies. The materials described in this invention combine "reverse" thermoviscosification mucoadhesion, solubilization of hydrophobic and difficult to manage moieties, easy formulation, and protection of agents from degradation to provide a superior medium for cosmetic and personal care products.

The reversible viscification of the polymer network at elevated temperatures makes the materials idea for use as thickening agents in cosmetic and personal care products at any temperature above the transition. Another use of the "thickening" of solutions containing the polymer network as a thickener supplement in emulsions. Currently, emulsifiers are often negatively affected by increased temperatures. An additive with reverse thermal viscification properties, however, would react in exactly the opposite way, increasing its ability to emulsify as it gained three-dimensional structure upon heating above its transition temperature.

In the applications where the reversibly gelling polymer composition can act as a surfactant, the polymer network will have the ability to act as a primary emulsifier without any (or with very little) addition of traditional surfactant. The responsive polymer network will also act as a stabilizer for oil soluble ingredients that would conventionally need to be solubilized by oils in formulation. The hydrophobic portion of the polymer network (PPO) forms domains which act as reservoirs for an oil-soluble or hydrophobic additive, such as an oil droplet, as is illustrated in Figure 9. These two features of the material of the invention would enable it to be used as a base in a cosmetic formulation that would be non-greasy due to lack of oils, such as petrolatum and mineral oil. The increase in viscosity above the transition temperature adds structure and yield value to the water phase and results in a highly stable emulsion.

Thus, poloxamer:poly(acrylic acid) polymer network compositions are valuable materials in the formulation of cosmetic and personal care products. In particular, they may be useful as rheology modifiers, provide a cushioning effect on the skin, offer barrier properties and controlled release of actives. In addition, the polymer  
5 composition may serve as a surfactant and is compatible with most ingredients used in the cosmetic industry.

The above properties of the poloxamer:poly(acrylic acid) polymer network provides a cosmetic composition that spreads evenly and smoothly and which leaves a lubricious feel to the skin. A sensory evaluation was conducted with seven random  
10 volunteers in order to determine the sensory effect of a cream formulation on the skin. An oil-free cosmetic formulation was prepared substantially as set forth in Example 33(b) and was compared to Nivea Oil Free, a product of Beiersdorf of Germany. Volunteers placed unmarked samples on the skin and evaluated the formulation based upon its feel and texture. The samples were rated on a scale of 1 (bad) to 5 (good).  
15 The oil-free cosmetic formulation of the present invention scored equally to the Nivea Oil Free moisturizing product. Both samples scored a 3.5 on the rating scale.

The observed thermal behavior of the reversibly gelling polymer network suggests that the increase in viscosity is due to aggregation of the hydrophobic portion of the poloxamer at the transition temperature which, because of bonding with the  
20 poly(acrylic acid) component, serve as temporary cross-links which physically bridge adjacent chains of poly(acrylic acid) to provide a viscous gel-like extended polymer structure. The aggregation process may be understood as occurring as shown in Figure 10, in which a backbone 20 represent poly(acrylic acid), a thin band 24 represents the hydrophobic poly(propylene) glycol region of the poloxamer and a thick band 26  
25 represents the hydrophilic poly(ethylene glycol) region of the poloxamer. Below the transition temperature, the polymer network is randomly arranged, as is shown in Figure 10(a). At or above the transition temperature, the hydrophobic regions 24 associate to form aggregations or micelles 28, as is shown in Figure 10(b). The association increases the effective molecular weight of the polymer network  
30 composition with the corresponding increase in viscosity.

A general method of making the poloxamer:PAA polymer network compositions of the present invention comprises solubilization of the poloxamer in acrylic acid monomer, followed by polymerization of the monomer to PAA. Polymerization may be accomplished by addition of a polymerization initiator or by irradiation techniques.

- 5 The initiator may be a free radical initiator, such as chemical free radical initiators and UV or gamma radiation initiators. Conventional free radical initiators may be used according to the invention, including, but in no way limited to ammonium persulfate, benzoin ethyl ether, benzyl peroxide, 1, 2'-azobis(2,4-dimethylpentanitrile) (Vazo 52) and azobisisobutyronitrile (AIBN). Initiation may also be accomplished using cationic
- 10 or ionic initiators. many variations of this method will be apparent to one skilled in the art and are contemplated as within the scope of the invention. For example, the poloxamer component may be dissolved in an acrylic acid/water mixture instead of pure monomer. It may be desirable to remove unreacted monomer and/or free poloxamer from the resultant polymer network. This may be accomplished using conventional
- 15 techniques, such as, by way of example, dialysis or sohxlet extraction.

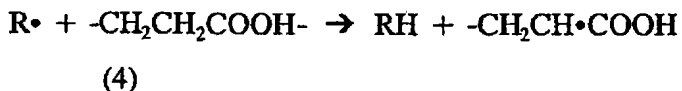
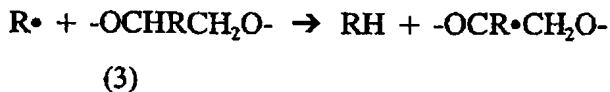
Without intending to be bound by a particular mechanism or structure, the following scheme represents a possible chemical mechanism for the formulation of the system here described. These mechanisms are presented by way of explanation and are no way limiting of the invention. It is contemplated that these or other mechanistic

20 routes may in fact occur in the formation of the polymer network of the present invention.

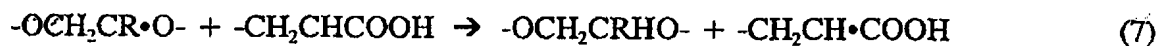
#### I. Initiation



#### 25 II. Hydrogen Abstraction



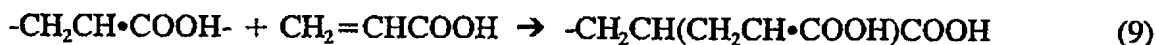
#### 30 III. Chain Transfer



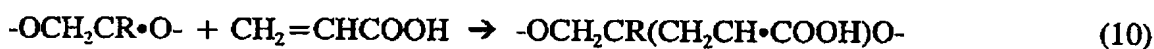
#### IV. Propagation



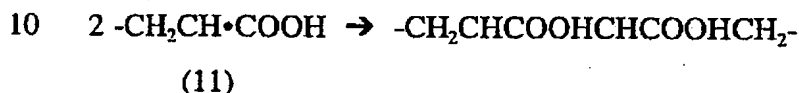
#### 5 V. Side Chain Branching Off AA Backbone



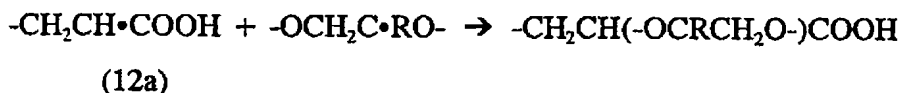
#### VI. AA Branching Off Poloxamer Backbone



#### VII. Homogenous Termination



#### VIII. Heterogenous Termination with Bonding of Pluronic to PAA



15

The scheme for bonding of poloxamer to acrylic acid may involve initiation (Eq. 1), hydrogen abstraction from the propylene or ethylene moiety of the poloxamer (Eq. 3), and attachment to acrylic acid via addition across the unsaturated bond (Eq. 10). Propagation (Eq. 8) leads to the final PAA.

20

Alternatively, the mechanism may proceed by initiation according to Eqs. (1) and (2), propagation to form PAA (Eq. 8), a chain transfer reaction to generate a reactive poloxamer moiety (Eq. 5), followed by addition of the reactive poloxamer moiety to the unsaturated bond of acrylic acid (Eq. 10) and subsequent propagation of the PAA chain.

25

Thus, the polymer network may include a plurality of poly(acrylic acid) units bounded to a single poloxamer unit, or alternatively, a plurality of poloxamer units bound to a single PAA backbone. Combinations of these alternatives are also a possibility.

30

Reverse phase polymerization may be used to prepare polymer network beads by dispersion of the poloxamer and acrylic acid monomer mixture in a nonpolar solvent

such as hexane or heptane. The aggregating polymer/monomer solution is dispersed with agitation in the nonpolar solvent in order to suspend droplets of the solution. Polymerization of the monomer is initiated by conventional means (i.e., addition of an initiator or irradiation) in order to polymerize the monomer and form responsive polymer network beads. See U.S.S.N. 08/276,532 filed July 18, 1995 and entitled "Useful Responsive Polymer Gel Beads" for further information on the preparation of polymer gel beads, herein incorporated by reference. Such a method may be particularly desirable to provide a heat sink for the heat generated in the exothermic polymerization reaction.

The polymer network complexes and aqueous gelling solutions of the present invention may be understood with reference to the following examples, which are provided for the purposes of illustration and which are in no way limiting of the invention.

Example 1. This example describes the synthesis of a polymer network and an aqueous responsive polymer network solution prepared using a triblock polymer of poly(ethyleneoxide) and poly(propyleneoxide), Pluronic® F27 polyol, and poly(acrylic acid). This example also characterizes the gelation and the physical properties of the resultant polymer network.

Synthesis. Block copolymer of poly(propyleneoxide) (PPO) and poly(ethyleneoxide) (PEO) having triad ABA structure  $(\text{PEO})_A(\text{PPO})_B(\text{PEO})_A$  (Pluronic® F127 NF polyol, Poloxamer 407 NF polyol, where "F" means Flakes, "12" means  $12 \times 300 = 3600$  - MW of the PPO section of the block copolymer, "7" PEO in the copolymer is 70 wt%, and nominal molecular weight is 12,600) from BASF (3.0 g) was dissolved in 3.0 g acrylic acid (Aldrich). This represents a substantially 1:1 weight ratio of Pluronic® F127 polyol and poly(acrylic acid). The solution was deaerated by  $\text{N}_2$  bubbling for 0.5 h and following addition of 100 ml of freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70°C for 16 h resulting in a transparent polymer.

Viscosity measurements. A known amount of the resultant polymer was suspended in 100 ml deionized water into which NaOH was added. Following swelling



for 3 days while stirring, the pH of the resulting fine suspension was adjusted to 7. Samples of 15 ml each were taken, and pH in each vial was adjusted to desired value by addition of 1 M HCl or NaOH. Samples were then kept overnight and their viscosities were measured at different temperatures using Brookfield viscometer using either an  
5 SC4-18 or an SC4-25 spindle.

A control experiment was done with a physical blend of Pluronic® F127 polyol and poly(acrylic acid) (MW 450,000) available from Aldrich. Pluronic® F127 polyol and poly(acrylic acid) were dissolved together in deionized water at 1 wt% total polymer concentration and the resultant solution was adjusted to pH 7, stirred and kept  
10 in refrigerator. The responsiveness of the polymer network composition and the physical blend to temperature and pH is illustrated in figs. 1, 11, and 12. Figs. 1 and 2 clearly demonstrate that the synthetic route outlined above resulted in a polymer network system that is sensitive to pH and temperature of the environment. Note that the liquid-gel transition is very sharp, occurring over a very small temperature change of pH (see Figure 11). Figure 12 is a viscosity vs. temperature graph comparing the  
15 gelling characteristics of the responsive polymer network composition and the physical blend. The blend prepared by physically mixing the triblock PEG/PPG/PEG polymer and poly(acrylic acid) did not exhibit viscosifying effect either as a function of temperature or pH.

It was generally observed that 0.5 - 5 wt% polymer network compositions made of Pluronic® F127 polyol and poly(acrylic acid) viscosify at temperatures of around 30°C and higher if pH is adjusted to 6 or higher. The gelling effect was observed in polymer network compositions standing 3 months or longer. Repeated heating and cooling of responsive polymer network compositions did not cause deterioration of the  
25 polymer network or the gelling effect. Solutions of either Pluronic® F127 polyol or poly(acrylic acid) (1-5 wt% in water, adjusted to pH 6 or higher) or physical blends of the two lacked the reverse thermal gelling effects found for polymer network compositions.

Example 2. this example describes a standard operating procedure for the  
30 manufacture of the reversible gelling polymer network.

The procedure is based upon a 50 liter production. A NaOH solution was prepared by dissolving 131.8 g NaOH pellets in 131.8 mL DI water (50% solution). The NaOH was allowed to dissolve completely. The NaOH solution will be used to convert a percentage of the acrylic acid to sodium acrylate in situ. Acrylic acid monomer (4 kg) is charged into a monomer feed tank and agitated at 250 rpm. NaOH is added slowly. The precipitate formed as the acrylic acid is neutralized to sodium acrylate is allowed to dissolve. Pluronic® F 127 (3.5 kg) is slowly added to the monomer feed tank. Pluronic® F127 is dissolved under continued agitation. Norpar 12 (a refined C-12 alkane) is added to the reaction vessel (37 L). The mixture is agitated at 100 rpm. Stabilizer solution of Ganex V-126 is prepared in 2L Norpar 12 and added to the reactor under agitation.

A reaction vessel was degassed using a nitrogen sparge introduced from the bottom of reactor and was continued throughout the reaction. Initiator (13.63 g Lauryl peroxide and 4.23 g Vazo 52 in 0.7 kg acrylic acid monomer) is introduced into the monomer solution. the monomer solution was transferred to the reaction vessel. Agitation was increased to 150 rpm. Nitrogen sparging continued for an additional 20 minutes, and then heating began. heating began at a rate of 0.5 -1.0°C/min up to 75°C. The reaction began to exotherm at about 45-50°C and is allowed to continue without cooling until a maximum is reached. It is then cooled to 75°C using forced cooling. The reaction continued for 12 hours and was then cooled to 35°C. The slurry was transferred into pails and the polymer beads were allowed to settle.

The slurry was filtered through Buchner Funnels with filter paper (11 µm pore size) until the bulk of the Norpar had been removed from the beads. The beads were washed three times with heptane. The filtered beads were transferred to a Pyrex drying tray and spread on the tray in a uniform layer. The beads were dried under vacuum for 4 hours at 40-50°C. The dried beads were analyzed as follows.

Elemental analysis. The elemental analysis was performed by Quantitative Technologies, Inc., Whitehouse, NJ using a Perkin Elmer 2400 CHN Elemental Analyzer. Analysis provided C (52.49%), H (7.50%), N (<0.05%), the balance assumed to be oxygen (39.96%).

Thermal Gravimetric Analysis (TGA). The TGA method was performed by Massachusetts Material Research, Inc., West Boylston, MA using a Dupont TGA model 295. The assay was run using a temperature ramp from 30 to 500°C/min. The resolution for the system was set to 4 (1.0°C/min for all slope changes). The data was analyzed using the first derivative of the curve and using maxima and minima to mark transitions. The moisture content was also calculated in this manner. The first derivative yielded three maxima. The first transition (moisture) was 3.0% by weight, the second transition was 14.0% by weight, and the third was 67.02% by weight. Residue (15.98%) remained.

Molecular weight determination by gel permeation chromatography (GPC). The molecular weight was determined by GPC on a Hewlet Packard 1100 Liquid Chromatography system with a Viscotech T60 Triple Detector system. Three Waters Ultrahydrogel columns, 1000, 500 and 250 Å, were used for the separation. The mobile phase was 0.1 M NaNO<sub>3</sub> and 0.01 M K<sub>2</sub>HPO<sub>4</sub> salt solution, pH adjusted with phosphoric acid to a pH of 8.0 ± 0.1. the flow rate for the separation was 0.9 mL/min. The column temperature was maintained at 15°C. The injection volume for the assay was 50 µL. A PEG molecular weight standard of 23,000 Daltons was used to align the detectors. The result for the assay were:

M<sub>n</sub>: 341,700 Daltons

M<sub>p</sub>: 1,607,000 Daltons

M<sub>w</sub>: 2,996,000 Daltons

Free poloxamer determination by GPC. The amount of free (unbound) poloxamer in the polymer matrix was determined using the above GPC method and comparing the poloxamer peaks to that of a standard poloxamer solution. The typical result is approximately 18-22% free poloxamer by weight.

The effect of both the bonded and non-bonded poloxamer on the gelation properties of the responsive polymer network has been determined by extraction of the non-bonded poloxamer from the material. Such extraction studies have established that the graft co-polymer alone exhibits the characteristic reverse thermal gelation of the composition; however, the presence of non-bonded poloxamer component modulates

the gelation process. The non-bonded poloxamer component can affect the temperature of transition (from liquid to gel) and the degree of transition and assists in a more controlled and reproducible transition.

Bound poloxamer determination by ethylene oxide (EO) titration. The EO

5 titration was performed as follows. A 5 gm sample of the product polymer was extracted in dichloroethane for three hours at reflux temperatures. The solid is removed and dried under a vacuum for 12 hours at room temperature. The dry material is then analyzed using ASTM method D 2959-95, "Standard Test Method for Ethylene Oxide Content". The amount of EO in the sample is related to the amount of poloxamer  
10 bound to the polymer. The typical result is approximately 15% by weight of EO.

The relative amount of free poloxamer may be varied dependent upon the relative proportions of starting materials and the method of polymerization. Although the residual solids presumably contain only poloxamer which is bounded to the poly(acrylic acid), i.e., a graft co-polymer, the material still shows strong  
15 viscosification when it is neutralized and dissolved in water. However, the temperature of viscosification is increased substantially and the degree of viscosification per gram of total solids is increased by removal of free poloxamer. Thus, the free poloxamer plays a role in modifying the extent and temperature of viscosification. The poloxamer undergoes conformational changes and changes to the critical micelle concentration as a  
20 function of temperature. The poloxamer will change from an open, non-aggregated form to a micellular, aggregated form with changes in temperature.

Residual acrylic monomer determination by gas chromatography (GC). The residual acrylic acid monomer was determined by GC analysis using a Hewlet Packard GC 5890A, using a HP-FFDAP-TPA 10 m x 0.52 mm x 1  $\mu$ m column. The sample  
25 was extracted and run in methanol. Using an internal standard ratio, the sample was compared to a one point calibration. The typical results for this assay were below 70 ppm acrylic acid monomer.

Residual Norpar solvent by GC. The residual Norpar in the sample was determined by GC using the above method and comparing the Norpar peaks to that of a  
30 standard. The typical results were below 1.5 wt%.

UV-vis spectrum. Optical clarity data of UV-vis spectrophotometer was obtained. A 1.0% solution in water was prepared and measured at 420 nm. Transmittance (%) was typically greater than 90%.

Differential scanning calorimetry (DSC). The DSC was performed by Massachusetts Material Research, Inc., West Boylston, MA using a temperature ramp from 30 to 350°C at 5°C/min. The resolution for the system was set to 4 (1.0°C/min for all slope changes). The assay yielded one endothermic event at 265°C, typically 270 J/g.

Examples 3-9. These examples describe the synthesis of several reversible thermal gelling polymer networks prepared using a variety of poloxamers and poly(acrylic acid). The gelation and the physical properties of the resultant polymer network compositions are reported in Table 2.

Table 2

Example	Poloxamer	Poloxamer Composition	Polox- amer: PAA	Trans. Temp.	Comments
3	Pluronic® F88 Prill polyol	2400 MW PPO; 80 wt% PEO; nominal MW 11,400	1:1	48°C	viscosity response curve shown in Figure 13
4	Pluronic® F127 NF polyol	3600 MW PPO; 70 wt% PEO; nominal MW 12,600	1:1	30°C	pentaerythritol triallyl ether crosslink agent used
5	Pluronic® P104 polyol	3000 MW PPO; 40 wt% PEO; nominal MW 5,900	1:1	28°C	viscosity response curve shown in Figure 14
6	Pluronic® P123 polyol	3600 MW PPO; 30 wt% PEO; nominal MW 5,750	1:1	25°C	viscosity response curve shown in Figure 15
7	Pluronic® F127/ Pluronic® F108 polyol blend (1:1)	as above	1:1.7	42°C	polymer solid formed, dried; resolubilized in neutralizing solution
8	Pluronic® F88 polyol	as above	1:1.7	80°C	polymer solid formed, dried; resolubilizing in neutralizing solution
9	Pluronic® F127/ Pluronic® F88 polyol blend (1:1)	as above	1:1.7	85°C	polymer solid formed, dried; resolubilizing in neutralizing solution

**Example 10.** The following example demonstrates the effect of hydrophilic/hydrophobic ratio on the gelling temperature. Polymer network compositions were prepared from the following poloxamers shown in Table 3.

**Table 3. Composition of Poloxamers Investigated.**

triblock polyol polymer composition	MW of PPO block	wt% of PEO block
P103 (PEO) <sub>37</sub> (PPO) <sub>56</sub> (PEO) <sub>37</sub>	3250	50
P104 (PEO) <sub>25</sub> (PPO) <sub>56</sub> (PEO) <sub>25</sub>	3250	40
P105 (PEO) <sub>16</sub> (PPO) <sub>56</sub> (PEO) <sub>16</sub>	3250	30

Table 3 shows that in this series, the fraction of PEO is reduced when the molecular weight of the PPO block is kept constant. Linse (*Macromol.* 26:4437-4449 (1993)) report phase diagrams for these copolymers in water were calculated and it was shown that two-phase boundaries corresponding to the beginning of aggregation are almost unaffected by the molecular mass, given a constant PEO/PPO ratio, whereas these boundaries shifted to lower temperature as the PEO content of the polymer is reduced at constant mass. The strong dependence of the PEO/PPO ratio is a consequence of the differing solubilities of PEO and PPO in water at the elevated temperatures. Thus, one would suppose that aggregation that causes viscosification in the responsive polymer network composition should shift to lower temperature as PEO fraction decreases.

The poloxamer (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N<sub>2</sub> bubbling for 20 min. and following addition of the 100:1 of freshly prepared saturated solution of ammonium persulfate in deionized water was kept at 70°C for 16 h resulting in a strong whitish polymer. A sample of the polymer obtained (0.4 g) was suspended in 40 ml deionized water into which NaOH was added. Suspended responsive polymer network particles were allowed to dissolve under constant stirring. The resulting 1 wt% polymer network solution were subjected to the

viscosity measurement at shear rate of 132 or 13.2 sec<sup>-1</sup> using a SC4-18 spindle. It can be seen from Figure 16 that, firstly, viscosity of the 1 wt% responsive polymer network solutions before viscosification (at 20-24°C) decreases in the series

(PEO)<sub>37</sub>(PPO)<sub>56</sub>(PEO)<sub>37</sub>(F103) > (PEO)<sub>25</sub>(PPO)<sub>56</sub>(PEO)<sub>25</sub>(F104) >

- 5 (PEO)<sub>16</sub>(PPO)<sub>56</sub>(PEO)<sub>16</sub>(F105) and, secondly, the temperature at which gelation shifts from about 45°C for (PEO)<sub>37</sub>(PPO)<sub>56</sub>(PEO)<sub>37</sub> to about 35°C for (PEO)<sub>25</sub>(PPO)<sub>56</sub>(PEO)<sub>25</sub> and (PEO)<sub>16</sub>(PPO)<sub>56</sub>(PEO)<sub>16</sub>. Both results are in excellent agreement with the theory set forth in Linse.

- Example 11. The following example is related to release of and active agent  
10 from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein hemoglobin from poloxamer:poly(acrylic acid) polymer network is described.

- Synthesis. Pluronic® F127 (3.0 g) was dissolved in 3.0 g acrylic acid. The solution was deaerated by N<sub>2</sub> bubbling for 0.5 h and following addition of 100 Fl of  
15 freshly prepared saturated solution of ammonium persulfate (Kodak) in deionized water was kept at 70°C for 16 h resulting in a transparent polymer. The resultant responsive polymer network obtained (5 g) was suspended in 95 ml deionized water into which NaOH was added. The resulting suspension was allowed to swell for 7 days.

- Hemoglobin loading and release. A 5 wt% responsive polymer network  
20 composition (3 g) was allowed to swell for 16 h in 10 ml of 0.25 mg/ml solution of human hemoglobin (Sigma) in deionized water adjusted to pH 8. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (#2063). The receiver chamber was  
25 continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the hemoglobin-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 0.25 mg/ml hemoglobin solution. After the feed solution had been loaded into the cell,  
30 the kinetic time commenced. Samples of the receiver phase was withdrawn from time

to time and their absorbance was measured spectrophotometrically at 400 nm. To calculate hemoglobin concentrations, corresponding calibration curves (absorbance in PBS versus hemoglobin concentration) were generated. The results of the kinetic experiment are presented in Figure 17. It can be seen that the rate of hemoglobin release from the polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in the polymer network at elevated temperatures (see Figure 1). The protein released from the polymer network composition still retained its native structure, as was determined by comparison of UV-vis spectra of release hemoglobin and natural hemoglobin.

Example 12. The following example is related to release of an active agent from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of the protein lysozyme from a polymer network is reported.

Lysozyme loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 16 h in 10 ml of 1 mg/ml solution of chicken egg-white lysozyme (Sigma) and 1.5 mg/ml sodium dodecyl sulfate (Aldrich) in deionized water adjusted to pH 8.5. The resulting mixture was well shaken and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (#2063). The receiver chamber was continuously stirred by a magnetic bar. The cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the lysozyme-loaded responsive polymer network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 1 mg/ml lysozyme solution. After the feed solution had been loaded into the cell, the kinetic time commenced. Samples were withdrawn and their absorbance measured spectrophotometrically at 280 nm. A calibration curve was prepared for lysozyme concentration ranging from 0 mg/ml to 0.5 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 18. It can be seen that the rate of lysozyme release from the responsive polymer network composition was substantially lowered at 37°C when



compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

In order to demonstrate the retention of the enzymatic activity of lysozyme, the lysozyme released from the responsive polymer network composition was assayed using  
5 Micrococcus lysodeikticus cells and compared to that of original lysozyme. The enzymatic activity of lysozyme was the same, within the error of the assay (15%), as that of the original lysozyme. Control without lysozyme in presence of sodium dodecyl sulfate did not show any appreciable lysis of the cells.

Example 13. The following example is related to release of an active agent  
10 from a poloxamer:poly(acrylic acid) polymer network. Drug loading and kinetics of release of insulin from a responsive polymer network composition is reported.

Insulin loading and release. A 5 wt% responsive polymer network composition (3 g) was allowed to swell for 15 h in 10 ml of 5 mg/ml solution of bovine Zr<sup>2+</sup>-insulin (Sigma) in deionized water adjusted to pH 7. The resulting mixture was well shaken  
15 and placed into the feed chambers of customized vertical, static, Franz-like diffusion cells made of Teflon. The feed and receiver chambers of the diffusion cells were separated by mesh screens (#2063). The receiver chamber was continuously stirred by a magnetic bar. the cells were allowed to equilibrate to either 25 or 37°C (in an oven). The feed and receiver phases consisted of 1 g of the insulin-loaded responsive polymer  
20 network and 6 ml of phosphate-buffered saline (pH 7.4), respectively. In the control experiment, the feed phase was made of 1 g of 5 mg/ml insulin solution. After the feed solution had been loaded into the cell, the timing commenced. Samples were withdrawn and their absorbance was measured spectrophotometrically at 280 nm. A calibration curve was prepared for insulin concentration ranging from 0 mg/ml to 1.25  
25 mg/ml in phosphate buffered saline. The results of the kinetic experiment are presented in Figure 19. The rate of insulin release from responsive polymer network was substantially lowered at 37°C when compared to that at 25°C, because of viscosity increase in responsive polymer network at elevated temperatures (see Figure 1).

Example 14. This example demonstrates the preparation of a sterile reversibly  
30 gelling polymer network aqueous composition and the stability of the composition to

sterilization. The polymer network is prepared as described in Example 1, except that the composition is prepared at 2 wt% Pluronic® F127 polyol/poly(acrylic acid). After dissolution of the 2 wt% polymer network in water, the viscosity is measured. The composition then is sterilized by autoclaving at 121°C, 16 psi for 30 minutes.

- 5 Viscosity is determined after sterilization. The corresponding curves for viscosity (a) before and (b) after sterilization are shown in Figure 20 and establish that minimal change in the viscosity profile of the material has occurred with sterilization.

Examples 15-30. These examples show additives which may be used to affect the transition temperature overall viscosification of the polymer network composition.

- 10 A 1 wt% polymer network was prepared in deionized water at pH 7 in which a variety of additives were included in the composition. The effect of the additive was determined by generation of a Brookfield viscosification curve. Results are reported in Table 4.

**Table 4.**

Example No.	Additive (wt%)	Effect of additive on:	
		Transition Temp. (°C)	Final Viscosity (% change)
15	1,2-methyl pyrrolidone (5)	I (1.8)	N
	Rhodapex CO-436 (2)	I (1.6)	N
	Dow Corning 190 (2)	I (5)	I (150)
	isopropyl alcohol (0.5)	I (3.1)	I (45)
20	Pluronic® L122 (1)	D (4.4)	D (13)
	Pluronic® F88 (1)	N	I (41)
	Tween 80 (0.5)	N	I (18)
	Germaben® II (1)	D (9)	I (100)
	Iconol NP-6 (1)	D (9)	I (500)
25	Plurafac C-17 (0.5)	I (5.2)	D (36)
	Dow Corning 193 (0.75)	I (4.1)	D (12)
	glycerin (5)	D (2)	N-

Example No.	Additive (wt%)	Effect of additive on:	
		Transition Temp. (°C)	Final Viscosity (% change)
27	UC 50-HB 170/EO/PO random copolymer (0.5)	N	N
28	PVP K15 (1)	N	N
29	MAPTAC (1)	N	D (8)
30	potassium chloride (0.25)	N	D (34)

I = increase; D = decrease; and N = no change

**Example 31.** Because of the surfactant nature of the polymer network composition coupled with the gelation effect of the polymer network composition, it is possible to prepare formulations which are 100% water-based, but which are lubricous and thick.

Formulations including a nonionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

**Table 5.**

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Emulsifying Wax NF <sup>1</sup>	2.5
Mineral Oil	5.0

<sup>1</sup> Polowax available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains a nonionic surfactant and gives an emulsion that is fluid at room temperature but viscosifies above 32°C.

Formulations including a cationic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 6.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Behentrimonium Methosulfate (and) Cetearyl alcohol <sup>1</sup>	2.5
Mineral Oil	5.0

<sup>1</sup>Incroquat Behenyl TMS available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added and allowed to mix to homogeneity. This formulation contains a cationic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

Formulations including an anionic surfactant formulation: An O/W (oil-in-water) emulsion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 7.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Cetearyl Phosphate (and) Cetearyl alcohol <sup>1</sup>	2.5
Mineral Oil	5.0

<sup>1</sup>Crodafos CES available from Croda

Into a vessel equipped with a high efficiency homogenizer, the formula amount of all ingredients is added, water is added to 100% w/w and allowed to mix to homogeneity. This formulation contains an anionic surfactant and gives an emulsion that is fluid at room temperature but viscifies above 32°C.

Example 32. Acne Medication: An oil-free, clear, anti-acne treatment is made by combining the following ingredients utilizing conventional mixing techniques:

Table 8.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
Salicylic Acid	2.0
DL-Panthenol	0.5
Germaben® II <sup>1</sup>	0.1
Disodium EDTA	0.2
USP Purified Water	72.2

<sup>1</sup>Germaben® II available from Sutton Laboratories

To one vessel, equipped with a Lightnin' Mixer with a 3 blade paddle prop, the full amount of USP Purified Water to 100% w/w is added. While maintaining the temperature, with moderate to vigorous mixing, the formula amount of Disodium EDTA, Citric Acid, DL-Panthenol, Glycerin, Salicylic Acid, and Germaben® II is added. These materials are allowed to dissolve at 50°C. After dissolution, the vessel is then cooled to 20°C. To another vessel, equipped with a high efficiency homogenizer, the formula amount of responsive polymer network is added. The responsive polymer network vessel is then cooled to 4°C. After cooling, while vigorously homogenizing, the contents of the first vessel is added to the second vessel, and allowed to mix to homogeneity.

The composition displays a flowable clear jelly appearance with excellent spreadability and absorption characteristics at room temperature, and after heating the formulation to 32°C, the composition thickens to a gel-like consistency.

Example 33. (a) Oil-free Moisturizer (formulation I): An oil-free, lubricous moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 9.

Ingredient	% w/w
10 % wt. 1:1 responsive polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
PPG-2 Myristyl Ether Propionate	3.0
DL-Panthenol	0.5
Germaben® II <sup>1</sup>	0.1
Disodium EDTA	0.2
Citric Acid	0.01
USP Purified Water	71.19

<sup>1</sup>Germaben® II available from Sutton Laboratories

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The viscosity vs. temperature curve is shown in Figure 21 and demonstrates that addition of adjuvants to the composition significantly enhances the responsive polymer network maximum viscosity (>900,000 cps). The use of the poloxamer:poly(acrylic acid) polymer network in the formulation also imparts a unique viscosification effect after application to the skin, which is not evident in typical commercial O/W emulsion formulations (See Figure 21b).

(b) Oil-free Moisturizer (formulation II): An oil-free, lubricous moisturizer was made by combining the following ingredients utilizing conventional mixing techniques:

Table 10.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	20.0
Glycerin USP	5.0
Carbopol 980	1.0

Ingredient	% w/w
D-Panthenol, propylene glycol	1.0
Preservative	1.0
Hydrolyzed protein (and) hyaluronic acid	0.5
Sodium hydroxide	0.2
USP Purified Water	90

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

**Example 34. Sunscreen Lotion.** An oil-free, lubricous sunscreen lotion was made by combining the following ingredients utilizing conventional mixing techniques:

Table 11.

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	2.0
Glycerin USP	8.0
Carbopol 980	1.0
Parsol MCX	7.0
Myristyl Ether Propionate	5.0
Preservative	1.0
Cyclomethicone	1.0
Sodium hydroxide	0.2
USP Purified Water	74

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance

with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

**Example 35. Facial mask.** A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

**Table 12.**

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	1.0
Polyvinyl alcohol	6.0
Polyvinylpyrrolidone (20%)	5.0
D-panthenol, propylene glycol	1.25
Propylene glycol	1.25
USP Purified Water	85.5

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

**Example 36. Facial toner.** A face mask was made by combining the following ingredients utilizing conventional mixing techniques:

**Table 13.**

Ingredient	% w/w
1:1 polymer network as prepared in Example 1	0.01
Hydroxyethyl cetyldimonium phosphate	1.00
PEG-40 hydrogenated castor oil	2.00



Ingredient	% w/w
D-panthenol, propylene glycol	0.50
Glycerin	2.00
Witch hazel extract	5.00
USP Purified Water	88.49

5

The above ingredients were added and processed as described above for the acne composition. The composition displayed a flowable creamy lotion appearance with excellent emolliency, spreadability and absorption characteristics at room temperature. After heating the formulation to above 26°C, the composition thickened to a gel-like consistency. The addition of adjuvants to the composition significantly enhances the polymer network maximum viscosity.

Example 36. Solubilization studies of model hydrophobic agents in the poloxamer:poly(acrylic acid) polymer network: estradiol and progesterone. This example is presented to demonstrate the solubilization of a hydrophobic agent in the polymeric network. Progesterone and estradiol were used as the hydrophobic agents in this model solubilization study.

Acrylic acid (99%), fluorescein (98%),  $\beta$ -estradiol (98%), and progesterone (98%) were all obtained from Aldrich and used as received. Pluronic® F127 NF was obtained from BASF. Poly(oxyethylene-b-oxypropylene-b-oxyethylene)-g-poly(acrylic acid) copolymers (responsive polymer network) were synthesized by free-radical polymerization of acrylic acid in the presence of poloxamer as described above. The polymer network copolymers discussed here were composed of about 1:1 ratio of PAA to poloxamer. The rheological properties of polymer network were assessed using LVDV-II+ and RVDV-II+ Brookfield viscometers. The microscopic light scattering of 21 nm poly(styrene) latex particles in deionized water and 1 wt% reversibly gelling polymer network was measured using He-Ne laser as described previously (see Matsuo, E.S., Orkisz, M., Sun, S.-T., Li, Y., Tanaka, T., Macromolecules, 1994, 27, 6791). The solubility of fluorescein and hormones in aqueous solutions was measured by the equilibrium of excess solubilizate with the corresponding solution following

removal of undissolved species by centrifugation and filtration. Hydrophobic agents were assayed spectrophotometrically at 240 (progesterone) or 280 nm (estradiol), or by using 70/30 w/w H<sub>2</sub>SO<sub>4</sub>/MeOH (Tsilifonis-Chafetz reagent). In vitro hormone release studies were conducted using thermostated, vertical Franz cells. Spunbonded polypropylene microfilters (micron retention, 15-20) were used as a membrane separating feed and receiver phases in Franz cells. The responsive polymer network, water, ethanol, and 20% PEG in water were observed to wet the membrane. The receiver solution consisted of 20 w% PEG in water (pH 7) and were stirred by magnetic bars. The feed phases composed of responsive polymer network were loaded with either estradiol or progesterone. Each hormone was dissolved in ethanol and the resulting solution was added into the responsive polymer network.

Equilibrium solubility vs. temperature plots for estradiol and progesterone (partition coefficient octanol/water (P) 7200 and 5888, respectively), in aqueous solutions of Pluronic® F127 polyol and responsive polymer network are presented in Figure 22. It can be seen that increasing temperature and concentration (C) of polymers in the solution raises the amount of the hormone dissolved. In Figure 22a, vertical lines represent critical micellar temperatures (CMT) for corresponding Pluronic® F127 polyol solutions. It is interesting to note that the slope of the solubility-temperature plots increased as temperature reached CMT, indicating that solubilization in the Pluronic® solutions was predominantly due to the formation of micelles. Similar trend was observed in the responsive polymer network solutions. The S values in 5% aqueous solutions of branched PAA did not exceed 15 and 40 µg/mL at 60°C for estradiol and progesterone, respectively. The solubility values found for responsive polymer network were the same as S in parent Pluronic® solutions of equivalent concentrations. Therefore, it may be suggested that solubilization behaviors of the responsive polymer network are governed by the properties of the poloxamer incorporated into it. Thermodynamic parameters of the solubilization process with responsive polymer network were calculated using the same approximations as in the micellar solubilization with Pluronic® polyols. See, Saito, Y., Kondo, Y., Abe, M., Sato, T., Chem. Pharm. Bull., 1994, 42, 1348. Namely,

partition coefficient  $P$  was estimated from equilibrium solubilities of estradiol in responsive polymer network and water:

$$P = S_{SH}/S_W \quad (13)$$

by extrapolating the solubility plots of the steroid in Figure 22 to 100% responsive polymer network. Using  $P$  values obtained from data in Figure 23, we calculated the standard free energy change ( $\Delta G$ ), standard enthalpy of solubilization ( $\Delta H$ ), and standard entropy of solubilization ( $\Delta S$ ) using the following expressions:

$$\Delta G = -RT \ln P; \Delta H = -R \Delta \ln P / \Delta(1/T); \Delta S = (\Delta H - \Delta G)/T \quad (14)$$

Thermodynamic parameters obtained along with  $P$  values are given in Table 14.

Apparent partition coefficients and thermodynamic parameters for solubilization of estradiol by responsive polymer network.

**Table 14.**

T, K	$P = S_{SH}/S_W$	$\Delta G$ kJ/mol	$\Delta H$ kJ/mol	$\Delta S$ J/mol
277	490	-14.3	4.72	68.6
293	520	-15.2		52.0
310	660	-16.7		53.9
323	660	-17.4		54.0
333	660	-18.0		54.0

Negative  $\Delta G$  values indicate spontaneous solubilization at all temperatures, whereas positive  $\Delta H$  shows that the solubilization was endothermic, similar to the solubilization of estriol, as well as indomethacin, by the poloxamer. Notably,  $\Delta S$  of solubilization was always positive, suggesting that the more ordered water molecules surrounding hydrophobic estradiol molecules moved to the less ordered bulk phase when the estradiol was transferred to the hydrophobic core of PPG segments in responsive polymer network. The aggregation of the PPG segments at elevated temperatures provides not only temporary cross-linking in the gel, but also a thermodynamically "friendly" environment for the hydrophobic drugs. Indeed, one can express the free energy of formation of the aggregate core-water interface in responsive

polymer network as:

$$\Delta G = [\sigma P_w(1-\phi) + \sigma W_D \phi](4\pi R^2/n) \quad (15)$$

where  $\sigma P_w$  and  $\sigma W_D$  are the interfacial tensions between pure PPO polymer and water and between water and the drug, respectively;  $\phi$  is the volume fraction of the drug within the PPO core; R is the effective radius of the core; and n is the aggregation number.

Equation (3) shows that solubilization of a hydrophobic drug of high  $\sigma W_D$  should increase the stability of the aggregate. The solubilization process was found to decrease the critical micellization concentration and substantially increase the micellar core radius in Pluronic surfactants (Hurter, P.N., et al., "In Solubilization in Surfactant Aggregates", Christian, S.D., Ed., Marcel Dekker, New York, 1995). A similar trend is indicated by the lowering the onset of gelation of the responsive polymer network upon solubilization of fluorescein (LogP 2.1) (Figure 24). The solubilization of hydrophobic drugs by responsive polymer network, analogous to the micellar solubilization of drugs by poloxamer, suggests that the responsive polymer network can be an effective vehicle in drug delivery.

Our in vitro study of hormone release from responsive polymer network shows an increase in the initial transport rate with either decreasing total polymer concentration in the formulation or decreasing temperature (Figure 25). These effects are related to the changes in macroscopic viscosity of the responsive polymer network, which erodes more rapidly from the feed phase through the membrane into the receiver compartment as the viscosity decreases (Figure 26). The degree of the responsive polymer network erosion was measured by weighing hormone-loaded responsive polymer network before and after kinetic experiment.

Figure 27 shows that the relative amount of progesterone penetrating into the receiver phase decreased 4-fold with the increase of total polymer concentration, whereas the total relative amount of progesterone stayed almost constant as total polymer concentration in the responsive polymer network increased. This result shows the existence of two routes of transport of hydrophobic drugs in our model system. Firstly, the drug incorporated into aggregates within the responsive polymer network

system can flow through the membrane along with the erosion of the responsive polymer network; secondly, the drug not associated with the responsive polymer network aggregates can diffuse out of the responsive polymer network in the feed phase. The second process should not be related to the viscosity of the responsive polymer network. Indeed, the dynamic light scattering experiment shows no dramatic change of diffusivity of poly(styrene) latex particles in the responsive polymer network as temperature rises thereby increasing macroscopic viscosity more than 10-fold (Figure 28). This result indicates that the viscosity of the responsive polymer network is essentially unaffected on the microscopic scale.

10

Appendix A attached.

## APPENDIX A

**FUNCTION DEFINITIONS**

- |    |  |  |
|----|--|--|
|    | <b>Abrasive:</b> abrades, smoothes, polishes   | <b>Buffer:</b> helps maintain original pH (acidity or basicity) of a preparation   |
| 5  | <b>Absorbent powder:</b> takes up liquids, sponge-like action  | <b>Carrier:</b> a vehicle or base used for a preparation   |
|    | <b>Absorption base:</b> forms water-in-oil emulsions   | <b>Chelate:</b> form a complex with trace-metal impurities, usually calcium or iron  |
|    | <b>Acidulent:</b> acidifies, lowers pH, neutralizes alkalis  | <b>Colorant:</b> adds color, may be a soluble dy or an insoluble pigment   |
| 10 | <b>Amphoteric:</b> capable of reacting chemically either as an acid or a base; amphoteric surfactants are compatible with anionic and cationic surfactants | <b>Conditioner:</b> improves condition of skin and hair  |
|    | <b>Analgesic:</b> relieves pain  | <b>Coupling agent:</b> aids in solubilization or emulsification of incompatible componenets                                  |
|    | <b>Antacid:</b> neutralizes stomach acidity  | <b>Decolorant:</b> removes color by adsorption, bleaching or oxidaion  |
| 15 | <b>Antibacterial:</b> destroys/inhibits the growth/ reproduction of bacteria   | <b>Denaturant:</b> used to denature ethyl alcohol  |
|    | <b>Anti-caking:</b> prevents or retards caking of powders; keeps powders free-flowing  | <b>Dental powder:</b> powdered dentifrice  |
|    | <b>Anti-dandruff:</b> retards or eliminates dandruff   | <b>Deodorant:</b> destroys, masks, or inhibits formation of unpleasant odors   |
| 20 | <b>Antifoam:</b> suppresses foam during mixing   | <b>Depilatory:</b> removes hair chemically   |
|    | <b>Anti-inflammatory:</b> reduces, suppresses, counteracts inflammation  | <b>Detergent:</b> a surface-active agent (surfactant) that cleans by emulsifying oils and suspends particulate soil          |
|    | <b>Anti-irritant:</b> reduces, suppresses or prevents irritation   | <b>Disinfectant:</b> destroys pathogenic microorganisms  |
| 25 | <b>Antimicrobial:</b> destroys, inhibits or suppresses the growth of microorganisms  | <b>Dispersant:</b> promotes the formation and stabilization of a dispersion or suspension                                    |
|    | <b>Antioxidant:</b> inhibits oxidation and rancidity   | <b>Dye stabilizer:</b> see Stabilizer  |
|    | <b>Antiperspirant:</b> reduces or inhibits perspiration  | <b>Emollient:</b> softens, smoothes skin   |
|    | <b>Antipruritic:</b> reduces or prevents itching   | <b>Emulsifier:</b> a surface-active agent (surfactant) that promotes the formation of water-in-oil or oil-in-water emulsions |
| 30 | <b>Antiseptic:</b> inhibits the growth of microorganisms on the skin or on living tissue   | <b>Enzymes:</b> complex proteins produced by living cells that catalyze biochemical reactions at body temperature.           |
|    | <b>Antistat:</b> reduces static by neutralizing electrical charge on a surface   | <b>Fiber:</b> strands of natural or synthetic polymers; for instance, cotton, wool, silk, nylon, polyester                   |
| 35 | <b>Astringent:</b> contracts organic tissue after application  | <b>Film former:</b> solution of a polymer that forms films when the solvent evaporates after application to a surface        |
|    | <b>Binder:</b> promotes cohesion of powders  |  |
|    | <b>Bleaching agent:</b> lightens color, oxidizing agent  |  |
|    | <b>Botanical:</b> natural plant derivative   |  |

- Fixative:** fixes or sets perfumes; retards evaporation; promotes longer lasting aroma
- Flavor:** imparts a characteristic taste (and aroma) to edible foods and drinks; sometimes used in lip products
- Foam booster:** enhances quality and quantity of lather of shampoos
- Foamer:** a surface-active agent (surfactant) that produces foam; an emulsion of air-in-water
- Foam stabilizer:** see Foam booster
- Fungicide:** inhibits or destroys growth of fungi
- Gellant:** a gelling agent; forms gels; includes a wide variety of materials such as polymers, clays and soaps
- Glosser:** furnishes a surface luster or brightness; usually used in lip or hair products
- Hair colorant:** see Colorant
- Hair conditioner:** see Conditioner
- Hair dye:** imparts a new permanent or semi-permanent color to hair
- Hair-set polymer:** polymer and/or resins used to maintain desired hair shape
- Hair-set resin:** see Hair-set polymer
- Hair waving:** see Reducing agent and Neutralizer
- Humectant:** absorbs, holds, and retains moisture
- Hydrotrope:** enhances water solubility
- Intermediate:** basic chemicals which are chemically modified to obtain the desired function
- Lathering agent:** a surface active agent (surfactant) that forms a foam or lather on mixing with air in solution; see also Foamer
- Lubricant:** reduces friction, smoothes, adds slip
- Moisture barrier:** retards passage of moisture or water
- Molsturizer:** aids in increasing the moisture content of the skin through humectant or barrier action
- Neutralizer:** an oxidizing agent used in hair waving that stops the action of the reducing agent and re-establishes the disulfide linkages in hair
- Oil absorbent:** see Absorbent powder
- Ointment base:** an anhydrous mixture of oleaginous components used as a vehicle for medicaments
- Opacifier:** opacifies clear liquids or solids
- Oxidant:** oxidizing agent, neutralizes reducing agents, bleaching agent
- Pearlant:** imparts a pearlescent texture and luster
- Perfume solvent:** see Solvent and Solubilizer
- Peroxide stabilizer:** see Stabilizer
- Pigment:** a finely powdered insoluble substance used to impart color, luster, or opacity
- Plasticizer:** plasticizes (makes more flexible) polymeric films or fibers
- Polish:** smoothes; adds gloss and luster
- Polymer:** a very high molecular weight compound consisting of repeating structural units
- Powder:** a solid in the form of fine particles
- Preservative:** protects products from spoilage by microorganisms
- Propellant:** pressurized gas in a container used to expel the contents when pressure is released by opening a valve
- Protein:** naturally occurring complex combinations of amino acids
- Reducing agent:** reduces a chemical compound usually by donating electrons; neutralizes oxidizing agents
- Refatting agent:** adds oils materials to the surface of substrates, e.g., skin and hair
- Resin:** nonvolatile solid or semisolid organic substances obtained from plants as exudates to prepared by polymerization of simple molecules
- Sequestrant:** forms coordination complexes with multivalent positive ions
- Silicone:** polymeric organic silicon compounds which are water-resistant

- Skin protectant:** protects the skin from environmental
- Solubilizer:** solubilizes, usually into aqueous vehicles, normally insoluble materials, such as fragrances, flavors, oils, etc.
- Solvent:** usually liquids capable of dissolving other substances
- Stabilizer:** added to stabilize emulsions and/or suspensions
- Stimulant:** produces a temporary increase in the functional activity of an organism or any of its parts
- Surfactant** (surface active agent): lowers surface tension between two or more incompatible phases; soaps, detergents, wetting agents, solubilizing agents and emulsifying agents are typical surfactants; surfactants are classified as anionic, cationic, nonionic and amphoteric; anionic surfactants are negatively charged, cationic surfactants have no electrical charge
- Suspending agent:** keeps finely divided solid particles in suspension
- Sweetener:** sweetens to provide a more pleasant taste
- Tanning accelerator:** accelerates the tanning of skin
- Thickener:** thickens or increases viscosity/consistency
- Thixotrope:** the property of certain gels and emulsions of becoming more fluid or less viscous when shaken or stirred
- UV absorber:** used as a sunscreen and to protect preparations from degradation by UV radiation
- UVA absorber:** absorbs in the range 320-400 nanometers (nm)
- UVB absorber:** absorbs in the range 290-320 nanometers (nm)
- Wax:** any of numerous substances of plant, animal or synthetic origin that contain principally esters of higher fatty acids and higher fatty alcohols; free fatty alcohols, fatty acids and hydrocarbons may also be present; waxes derived from petroleum
- products are mainly high-molecular-weight hydrocarbons
- Wetting agent:** a surface-active agent (surfactant) that lowers the surface and interfacial tension, facilitating the wetting of surfaces



**FUNCTIONS****Abrasive**

- Adzuki beans
- 5 Almond (*Prunus amygdalus*) meal, shell granules
- Aluminum silicate
- Apricot (*Prunus armeniaca*) kernel powder, shells
- Hydrated silica
- Jojoba (*Buxus chinensis*) seed powder
- 10 Luffa cylindrica
- Olive stone granules
- Oyster shell powder
- Peach (*Prunus persica*) pit powder
- Peach (*Prunus persica*) stone granules
- 15 Polyethylene
- Polyethylene HEC granules
- Polyethylene oxidized, P. spheres
- Polystyrene
- Pumice
- 20 Rice (*Oryza sativa*) bran
- Silica and S. colloidal
- Sodium chloride
- Walnut (*Juglans regia*) shell powder

**Absorption base**

- 1,2,6-Hexanetriol
- Kaolin
- Petrolatum
- Rice (*Oryza sativa*) starch
- 30 Soy (*Glycine soja*) sterol
- Zeolite

**Absorbent powder**

- Corn (*Zea mays*) starch
- 35 Maltodextrin
- Nylon-12
- Oat (*Avena sativa*) bran, flour, meal
- Zeolite

**Acidulent**

- Acetic acid
- Citric acid
- Fumaric acid
- Glutamic acid
- 45 Glycolic acid
- Hydrochloric acid
- Lactic acid
- Nitric acid
- Phosphoric acid
- 50 Sodium bisulfate
- Sulfuric acid
- Tartaric acid

**AHA**

- Apple (*Pyrus malus*) extract
- Apricot (*Prunus armeniaca*) kernel powder
- Citric acid
- Ethyl lactate
- Glycolic acid
- Lactic acid
- Malic acid
- Sodium lactate
- Tartaric acid

**Antiacne**

- Clays (white, yellow, red, green, pink)
- Perfluorodecalin
- Salicylic acid
- Sulfur

**Anti-aging**

- Basil (*Ocimum basilicum*) extract
- Carrot (*Daucus carota*) extract
- Catalpa *kaempferi* extract
- Ceramide 33 (liquid soy extract)
- Crataegus *cuneata* extract
- Eugenia *jambolana* extract
- Fomes *fomentarius* extract
- Fomistopsis *pinicola* extract
- Ganoderma *lucidum* oil
- Ginseng (*Panax ginseng*) extract
- Hyaluronic acid
- Hydrolyzed serum protein
- Hydrolyzed soy flour
- Isachne *pulchella* extract
- Lactoferrin
- Lady's Thistle (*Silybum marianum*) extract
- Ligusticum *jeholense* extract
- Marine collagen
- Mushroom (*Coriolus versicolor*) extract
- Must rose (*Rosa moschata*) oil
- Perfluorodecalin
- Quaternium-51
- Rubus *thunbergii* extract
- Serum protein
- Stenocalyx *micalii* extract
- Tricholoma *matsutake* extract

**Antibacterial**

- Ammonium iodide
- Chlorhexidine
- Chlorhexidine diacetate, C. digluconate
- Chlorhexidine dihydrochloride

- Chlorphenesin  
Hexamidine diisethionate  
Héxétidine  
Iceland moss (*Cetraria islandica*) extract  
5 Lactoterrin  
Lauralkonium bromide, L. chloride  
Laurtrimonium chloride  
Laurylpyridinium chloride  
Mauritiella armata extract  
10 Mushroom (*Cordyceps sbolifera*) extract  
Orange blossom extract  
Orange (*Citrus aurantium dulcis*) peel extract  
PEG-42 Ebiriko ceramides extract  
Peppermint (*Mentha piperita*) extract  
15 Philodendron (*Phellodendron amurense*) extract  
Pine (*Pinus sylvestris*) needle extract  
Polymethoxy bicyclic oxazolidine  
Quaternium 73  
Rubus thunbergii extract  
20 Tea tree (*Melaleuca alternifolia*) oil  
Triclocarban  
Undecylenic acid

**Anticaking**

- 25 Aluminum starch octenyisuccinate  
Calcium stearate  
Distarch phosphate  
Hydrated silica  
Kaolin  
30 Magnesium myristate, M. silicate  
Polyethylene, micronized  
Silica silylate  
Sodium aluminum silicate  
Zinc stearate

**Anticaries agent**

- Cetylamine hydrofluoride  
Olaflur  
Sodium fluoride  
40 Stearyl trihydroxyethyl propylenediamine  
dihydrofluoride

**Anticellulite**

- Aminophylline  
45 Bladderwrack (*Fucus vesiculosus*) extract  
Butcherbroom (*Ruscus aculeatus*) extract  
Carcinia cambogia extract  
Fomes fometarius extract  
Fomistopsis pinicola extract  
50 Ivy extcry  
Mushroom (*Coriolus versicolor*) extract  
TEA-hydroiodide  
Tricholoma matsutake extract

**Antidandruff**

- Burdock (*Arctium lappa*) extract  
Chloroxylenol  
Corydalis ambigua extract  
Disodium undecylenamido MEA-sulfosuccinate  
Ginger root extract  
Inga edulis extract  
Mauritiella armata extract  
Myristalkonium saccharinate

- PEG-6 undecylenate  
Piroctone olamine  
Resorcinol  
Rosemary (*Rosmarinus officinalis*) extract  
Sodium shale oil sulfonate  
Stenocalyx micalii extract  
Undecylenamide DEA  
Willow (*Salix alba*) bark extract  
Zinc pyrithione

**Antifungal**

- Black walnut (*Juglans nigra*) extract  
Coneflower (*Echinacea angustifolia*) extract  
Orange blossom extract  
Pfaffia paniculata extract

**Anti-inflammatory**

- Allantoin polygalacturonic acid  
Bisabolol  
Black poplar (*Populus nigra*) extract  
Brassica rapa-depressa extract  
Butcherbroom (*Ruscus aculeatus*) extract  
Calendula officinalis extract  
Catalpa kaempfera extract  
Celastrus paniculata extract  
Ceramide 33 (liquid soy extract)  
Chaparral (*Larrea mexicana*) extract  
Coneflower (*Echinacea angustifolia*) extract  
Cornflower (*Centaurea cyanus*) extract  
Dipotassium glycyrrhizinate  
Euphatorium fortunei extract  
Duphrasia officinalis extract  
Ficus racemosa extract  
Golden seal (*Hydrastis canadensis*) root extract  
Guaiazulene  
Horse chestnut (*Aesculia hippocastanum*) extract  
Jujube (*Zizyphus jujuba*) extract  
Laminaria japonica extract  
Licorice (*glycyrrhiza glabra*) extract  
Ligusticum jeholense, L. lucidum extract  
Matricaria (*Chamomilla recutita*) extract  
Melaleuca uncinata extract  
Melia azadirachta extract

- Mulberry (*Morus nigra*) extract  
 Niacinamide ascorbate  
 Orange (*Citrus aurantium dulcis*) peel extract  
 Orange blossom extract  
 5 Palmetto extract  
 Palmitoyl collagen amino acids  
 Passion flower (*Passiflora laurifolia*) fruit extract  
 Paulownia *imperialis* extract  
 Alicyclic acid  
 10 Shea butter (*Butyrospermum parkii*)  
 Sodium carboxymethyl beta-glucan  
 soy (*Glycine soja*) protein  
 Stearyl glycyrrhetinate  
 Stenocalyx *micalii* extract  
 15 Tocopheryl acetate, T. nicotinate  
 Trichomonas *japonica* extract  
 Willow (*Salix alba*) extract  
 Witch hazel (*Hamamelis virginiana*) extract  
 withania *somniferum* extract  
 20 Yarrow (*Achillea millefolium*) extract  
 Zinc lactate

**Anti-irritant**

- Acetyl monoethanolamine  
 25 Allantoin  
 Allantoin acetyl methionine, A. glycyrrhetinic acid  
 Azelamide MEA  
 Betaine  
 30 Calendula *officinalis* extract  
 Cocamidopropyl betaine  
 Coceth-7 carboxylic acid  
 Cornflower (*Centaurea cyanus*) extract  
 Diisostearyl dimer dilinoleate  
 35 Dipalmitoyl cystine  
 Green tea extract  
 Hydrolyzed sweet almond protein  
 Hydroxypropyltrimonium gleatin  
 Lauroyl collagen amino acids  
 40 1-Lysine lauroyl methionine  
 Mallow extract  
 Matricaria (*Chamomilla recutita*) extract  
 Palmitoyl hydrolyzed milk protein  
 Palmitoyl hydrolyzed wheat protein  
 45 Palmitoyl keratin amino acids  
 PEG-12 palm kernel glycerides  
 PEG-28 glyceryl tallowate  
 PEG-30 glyceryl monocoate  
 PEG-60 almond glycerides  
 50 PEG-78 glyceryl cocoate  
 PEG-82 glyceryl tallowate  
 PEG-200 glyceryl tallowate  
 Propionyl collagen amino acids

**PVP**

Saccharomyces lysate extract  
 Sodium C12-15 pareth-15 sulfonate  
 Sodium lauroamphoacetate  
 Soy (*Glycine soja*) protein  
 Undecylenoyl collagen amino acids  
 Valerian (*Valeriana officinalis*) extract

**Antimicrobial**

Benzalkonium chloride  
 Benzoic acid  
 Benzyl alcohol  
 Bromochlorophene  
 2-Bromo-2-nitropropane-1,3-diol  
 Butylparaben  
 Capryloyl collagen amino acids  
 Capryloyl glycine, C. keratin amino acids  
 Captan  
 Cetethyldimonium bromide  
 Cetyl pyridinium chloride  
 Chlorothymol  
 Chloroxylonol  
 Citron oil  
 Copper PCA  
 Dichlorobenzyl alcohol  
 Dilauryldimonium chloride  
 Domiphen bromide  
 Ethylparaben  
 Eucalyptus (*Eucalyptus globulus*) extract  
 Fennel (*Foeniculum vulgare*) extract  
 Garlic (*allium sativum*) extract  
 Glyceryl caprylate, G. laurate  
 Hexamidine diisethionate  
 Hinokitiol  
 Honeysuckle (*Lonicera caprifolium*) extract  
 Lichen (*Usnea barbata*) extract  
 Myristalkonium chloride  
 Pentyleneglycol  
 Phenethyl alcohol  
 Phenol  
 Phenoxyethanol  
 Phenoxyisopropanol  
 Phenyl mercuric acetate, P.m. benzoate, P.m. borate  
 o-Phenylphenol  
 Polymethoxy bicyclic oxazolidine  
 Potassium sorbat  
 Propylparaben  
 Ricinoleamodopropyltrimonium ethosulfate  
 Sage (*Salvia officinalis*) extract  
 Sodium benzoate, S. pyrethione  
 Sodium ricinoleate, S. shale oil sulfonate  
 Thimerosal

- Thyme (*Thymus vulgaris*) extract  
Thymol  
Triclorcarban  
Triclosan
- 5 Undecylenamidopropyltrimonium methosulfate  
Undecylenic acid  
Zinc oxide, Z. PCA  
Zinc pyrithione, Z. undecylenate
- 10 **Antioxidant**  
Ascorbic acid  
A. polypeptide  
Ascorbyl oleate, A. palmitate  
Beta-carotene
- 15 BHA  
BHT  
t-Butyl hydroquinone  
Dilauryl thiodipropionate  
Dimyristyl thiodipropionate
- 20 Disodium EDTA  
Distearyl thiodipropionate  
Dodecyl gallate  
EDTA  
Erythorbic acid
- 25 Ferulic acid  
Grape (*Vitis vinifera*) seed extract  
Green tea extract  
HEDTA  
Hydroquinone
- 30 Hydroquinone-beta-D-glucopyranoside  
p-Hydroxyanisole  
Lactoferrin  
Lysine PCA  
Melanin
- 35 Methyl gallate  
Niacinamide ascorbate  
Nordihydroguaiareic acid  
Oat (*Avena sativa*) extract  
Oryzanol
- 40 Pentasodium pentetate  
Pentetic acid  
Propyl gallate  
Retinyl palmitate polypeptide  
Rosemary (*Rosmarinus officinalis*) extract
- 45 *Saccharomyces* lysate extract  
Sage (*Salvia officinalis*) extract  
Sodium ascorbate, S. erythorbate  
Sodium metabisulfite  
Sodium selenate, S. sulfite
- 50 Superoxide dismutase,  
Tea (*Camellia sinensis*) extract  
Tetrasodium EDTA  
Tocopherol
- Tocopheryl acetate, T. linoleate  
Wild marjoram (*Origanum vulgare*) extract  
Yeast (*Saccharomyces cerevisiae*) extract (Faex)
- Antiperspirant**  
Allantoin-aluminum chlorhydrate  
Aluminum capryloyl hydrolyzed collage  
Aluminum chlorhydrex-gly, A. chloride  
Aluminum chlorohydrate, A. chlorohydrex  
Aluminum PCA, A. sesquichlorohydrate  
Aluminum undecylenoyl collagen amino acids  
Aluminum zirconium pentachlorohydrate  
Aluminum zirconium tetrachlorohydrate  
Aluminum zirconium tetrachlorohydrex GLY  
Aluminum zirconium trichlorohydrate  
Aluminum-zirconium-glycine powder  
Sage (*Salvia officinalis*) extract  
Tormentil (*Potentilla erecta*) extract  
Zirconium chlorohydrate
- Antiseptic**  
Aluminum PCA  
Azadirachta indica extract  
2-Bromo-2-nitropropane-1,3-diol  
Calendula amurensis extract  
p-Chloro-m-cresol  
Clove (*Eugenia caryophyllus*) oil  
Crataegus cuneata extract  
Dichlorobenzyl alcohol  
Entada phaseoloides extract  
Eucalyptus (*Eucalyptus globulus*) extract  
Golden seal (*Hydrastis canadensis*) root extract  
Hexachlorophene  
Melia australasica, M. azadirachta extract  
Methyl salicylate  
Orange (*Citrus aurantium dulcis*) peel extract  
Oxyquinoline sulfate  
Pfaffia paniculata extract  
Potassium abietoyl hydrolyzed collagen  
PVP-iodine  
Silver nitrate  
Sodium salicylate  
Sterculia platanifolia extract  
Tea tree (*Melaleuca alternifolia*) oil  
Tormentil (*Potentilla erecta*) extract  
Xanthozylum bungeanum extract
- Antistat**  
Acetamide MEA  
Acetamidopropyl trimonium chloride  
6-(N-Acetylamino)-4-oxyhexyltrimonium chloride  
Alkyl dimethyl betaine

- Babassuamidopropylalkonium chloride  
Behenamidopropyl ethyldimonium ethosulfate  
Behenamidopropyl hydroxyethyl dimonium chloride  
5 Carboxymethyl chitin  
Cetethyl morpholinium ethosulfate  
Cetrimonium chloride  
Chitin  
Chitosan  
10 Cocamidopropyl ethyldimonium ethosulfate  
Cocodimonium hydroxypropyl hydrolyzed rice protein  
Cocodimonium hydroxypropyl hydrolyzed soy protein  
15 Dimethicone hydroxypropyl trimonium chloride  
dimethyl behenamine, D. cocamine  
Dimethyl palmitamine, D. soyamine  
Dimethyl tallowamine  
Dioleamidoethyl hydroxyethylmonium  
20 methosulfate  
Dipalmitoylethyl hydroxyethylmonium methosulfate  
N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride  
25 Erucamidopropyl hydroxysulfate  
Glyceryl monopyroglutamate  
Hydrogenated tallowamine oxide  
Isostearamide propyl dimethylamine  
Lactamidopropyl trimonium chloride  
30 Lauryldimonium hydroxypropyl hydrolyzed collagen  
Linoleamidopropyl dimethylamine dimer dilinoleate  
Olealkonium chloride  
35 PEG-2 cocamine  
PEG-2 cocomonium chloride  
PEG-2 oleammonium chloride  
PEG-8 caprylic/capric glycerides  
PEG-10 cocamine  
40 PEG-15 soyamine  
PPG-9 diethylmonium chloride  
PPG-25 diethylmonium chloride  
PPG-40 diethylmonium chloride  
Propylene glycol stearate  
45 Quaternium-26, -27, -53, -62, -72  
Rapeseedamidopropyl benzyltrimonium chloride  
Rapeseedamidopropyl epoxypropyl dimonium chloride  
Silica, colloidal  
50 Sorbitan caprylate  
N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Soyethyl morpholinium ethosulfate  
Soyethyldimonium ethosulfate  
Stearalkonium chloride  
Stearamidopropyl benzyl dimonium chloride  
Stearamidopropyl ethyldimonium ethosulfate  
Steartrimonium chloride  
N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate  
Wheat germamidopropylethyldimonium ethosulfate
- Astringent**  
Aluminum citrate, A. lactate  
Astragalus sinicus extract  
Astrocaryum murumuru, A. tucuma extract  
Azadirachta indica extract  
Azelamide MEA  
Bearberry (Arctostaphylos uva-ursi) extract  
Birch (Betula alba) leaf extract  
Catalpa baccata extract  
Celastrus paniculata extract  
Coccinea indica extract  
Coffee (Coffea arabica) bean extract  
Euphrasia officinalis extract  
Euterpe precatoria extract  
Evening primrose (Oenothera biennis) extract  
Gentian (Gentiana lutea) extract  
Geranium maculatum extract  
Grape (Vitis vinifera) leaf extract  
Henna (Lawsonia inermis) extract  
Hierochloa odorata extract  
Honeysuckle (Lonicera caprifolium) extract  
Hops (Humulus lupulus) extract  
Horehound extract  
Hypericum perforatum extract  
Ivy extract  
Juniperus communis extract  
Kadsura heteroloba extract  
Kola (Cola acuminata) extract  
Lady's mantle (Alchemilla vulgaris) extract  
Lemon (Citrus medica limonum) extract, peel extract  
Lemon bioflavonoids extract  
Lysimachia foenum-graecum extract  
Magnolia spp. extract  
Mauritia flexosa extract  
Maximiliana regia extract  
Melaleuca uncinata, M. wilsonii extract  
Melia australasica extract  
Nettle (Urtica dioica) extract  
Oak (Quercus) bark extract  
Ocimum basilicum, O. sanctum extract  
Palmetto extract  
Passion flower (Passiflora laurifolia) fruit extract

- Plantain (*Plantago major*) extract  
 Polygonum multiflorum extract  
 Pterocarpus marsupianus extract  
 Raspberry (*Rubus*) extract  
 5 Sambucus nigra oil  
 Sanguisorbae root extract  
 Selinum spp. extract  
 Shorea robusta extract  
 Tannic acid  
 10 Walnut (*Juglans regia*) leaf extract, oil  
 Wheat (*Triticum vulgare*) protein  
 White nettle (*Lamium album*) extract  
 Witch hazel (*Hamamelis virginiana*) extract  
 Xanthoxylum bungeanum extract  
 15 Zinc lactate  
 Ziziphus jujuba extract

**Binder**

- Aluminum starch octenylsuccinate  
 20 Boron nitride  
 C20-40, C30-50, C40-60 alcohols  
 Calcium stearate  
 Cellulose gum  
 Dihydroabietyl behenate  
 25 Diisostearyl malate  
 dioctyl sebacate  
 Distarch phosphate  
 ethylcellulose  
 Gellan gum  
 30 Hydrogenated jojoba oil  
 Isocetyl alcohol, I. palmitate  
 Isopropyl isostearate  
 Isostearyl erucate, I. isostearate  
 Isostearyl neopentanoate  
 35 Maltodextrin  
 Methylcellulose  
 Microcrystalline cellulose  
 Octyl palmitate  
 Octyldodecyl myristate  
 40 bis-Octyldodecyl stearyl dimer diinoleate  
 Octyldodecyl stearyl stearate  
 Oleyl oleate  
 PEG-20, -75, -150, -240, -350  
 Polydipentene  
 45 Polyethylene; P. micronized  
 PTFE  
 PVP  
 Sorbitol  
 Synthetic wax  
 50 Tapioca dextrin  
 Tridecyl benenate, T. neopentanoate  
 Tridecyl stearyl stearate  
 Trisodium HEDTA

**Biol. polymer**

- Distarch phosphate  
 Dog rose (*Rosa canina*) see extract  
 Hydrogen peroxide  
 Kojic acid  
 Mulberry (*Morus nigra*) extract  
 Sanguisorbae root extract

**Botanical**

- Acacia  
 Acacia farnesiana extract  
 Agrimony (*Agrimonia eupatoria*) extract  
 Alder (*Alnus firma*) extract  
 Alfalfa (*Medicago sativa*) extract  
 Algae (*Ascophyllum nodosum*) extract  
 Algae (*Lithothamnium calcareum*) extract  
 Aloe barbadensis, A.b. extract  
 Aloe capensis extract  
 Alpine Veronica extract  
 Althea officinalis extract  
 Angelica archangelica extract  
 Anise (*Pimpinella anisum*) extract  
 Apple (*Pyrus malus*) extract  
 Apricot (*Prunus armeniaca*) extract  
 Arnica montana extract  
 Artemisia capillaris extract  
 Artichoke (*Cynara scolymus*) extract  
 Asafetida (*Ferula assa foetida*) extract  
 Asiasarum \_\_\_\_\_ extract  
 Asparagus officinalis extract  
 Astragalus sinicus extract  
 Avena (*Geum rivale*) extract  
 Avocado (*persea gratissima*) extract  
 Balm mint (*Melissa officinalis*) extract, oil  
 extract  
 Vanana (*Musa sapientum*) extract  
 Barley (*Hordeum vulgare*) extract  
 Basil (*Ocimum basilicum*) extract  
 Bearberry (*Arctostaphylos uva-ursi*) extract  
 Bee pollen extract  
 Beet (*Beta vulgaris*) extract  
 Betaglucan  
 Bilberry (*Vaccinium myrtillus*) extract  
 Bioflavonoids  
 Birch (*Betula alba*) bark extract, leaf extract  
 Birch (*Betula platyphylla japonica*) extract  
 Bitter orange (*Citrus aurantium amara*) extract,  
 flower extract, peel extract  
 Black cohosh (*Cimicifuga racemosa*) extract  
 Black currant (*Ribes nigrum*) extract  
 Black henna extract  
 Black poplar (*Populus nigra*) extract  
 Black walnut (*Juglans nigra*) extract

- Bladderwrack (*Fucus vesiculosus*) extract  
 Borage (*Borago officinalis*) extract  
 Buckthorn (*Frangula alnus*) extract  
 Burdock (*Arctium lappa*) extract  
 5 Burdock (*Arctium minus*) root extract  
 Burnet extract  
 Butcherbroom (*Ruscus aculeatus*) extract  
 Cabbage rose (*Rosa centifolia*) extract  
 Calamus (*Acorus calamus*) extract  
 10 Calendula officinalis extract  
 Caper (*Capparis spinosa*) extract  
 Capsicum frutescens extract, C.f. oleoresin  
 Caraway (*Carum carvi*) extract  
 Carrageenan (*Chondrus crispus*)  
 15 Carrot (*Daucus carota*) extract  
 Carrot (*Daucus carota sativa*) oil  
 Cassia auriculata extract  
 Celandine (*Chelidonium majus*) extract  
 Chamomile (*Anthemis nobilis*) extract, oil  
 20 Chaparral (*Larrea mexicana*) extract  
 Cherry (*Prunus speciosa*) leaf extract  
 Cherry bark, C.b. extract  
 Chestnut (*Castanea sativa*) extract  
 Chinese hibiscus (*Hibiscus rosa-sinensis*) extract  
 25 Chlorella vulgaris extract  
 Cimicifuga foetida rhizome extract  
 Cinchona succiruba extract  
 Citroflavonoid, water soluble  
 Citrus bioflavonoid complex  
 30 Clary extract  
 Clove (*Eugenia caryophyllus*) extract  
 Clover (*Trifolium pratense*) extract  
 \_\_\_\_\_ officinale rhizome extract, C.o.  
 water  
 35 Coffee (*Coffea arabica*) bean extract  
 \_\_\_\_\_ oatmeal  
 \_\_\_\_\_ (*Tussilago farfara*) leaf extract  
 \_\_\_\_\_ (*Symphytum officinale*) leaf extract  
 \_\_\_\_\_ extract  
 40 \_\_\_\_\_ (*Echinacea angustifolia*) extract  
 \_\_\_\_\_ officinalis  
 \_\_\_\_\_ olitorius extract  
 \_\_\_\_\_ (*Coriandrum sativum*) extract  
 \_\_\_\_\_ (*Zea mays*) cob powder, silk extract  
 45 \_\_\_\_\_ poppy (*Papaver rhoeas*) extract  
 \_\_\_\_\_ (*Centaurea cyanus*) extract  
 \_\_\_\_\_ (*Agropyron repens*) grass  
 \_\_\_\_\_ monogina extract  
 \_\_\_\_\_ maritimum extract  
 50 Cucumber (*Cucumis sativus*) extract  
 Cypress (*Cupressus sempervirens*) extract  
 Dandelion (*Taraxacum officinale*) extract  
 Date (*Phoenix dactylifera*) extract  
 Dead Sea Mud, Salts  
 Dog rose (*Rosa canina*) hips extract  
 Dyer's broom extract  
 Eleuthero ginseng (*Acanthopanax senticosus*)  
 extract  
 Elm (*Ulmus campestris*) extract  
 Eucalyptus (*Eucalyptus globulus*) extract  
 Eucalyptus globulus oil  
 Eucommia ulmoides extract  
 Euphrasia officinalis extract  
 Evening primrose (*Oenothera biennis*) extract, oil  
 Everlasting (*Helichrysum arenarium*) extract  
 Fennel (*Foeniculum vulgare*) extract  
 Fenugreek extract  
 Fermented rice (*Oryza sativa*) extract  
 Fern (*Dryopteris filix-Mas*) extract  
 Fig (*Ficus carica*) extract  
 Fir needle extract  
 Fumitory (*Fumaria officinalis*) extract  
 Gardenia florida extract  
 Garlic (*Allium sativum*) extract  
 Gelidium cartilagineum  
 Gentian (*Gentiana lutea*) extract  
 Geranium maculatum extract  
 Ginger root extract  
 Ginkgo biloba extract  
 Ginseng (*Panax ginseng*) extract  
 Glycyrrhetic acid  
 Glycyrrhizic acid  
 Glycyrrhizin ammoniated  
 Golden seal (*Hydrastis canadensis*) root extract  
 Goldthread (*Coptis japonica*) extract  
 Gotu kola extract  
 Grape (*Vitis vinifera*) distillate, extract  
 Grape (*Vitis vinifera*) leaf, seed extract  
 Grape skin extract  
 Grapefruit (*Citrus grandis*) peel extract  
 Green bean (*Phaseolus lunatus*) extract  
 Ground Ivy (*Glechoma hederacea*) extract  
 Guarana (*Paullinia cupana*) extract  
 Harpagophytum procumbens extract  
 Hay flower extract  
 Hazel (*Corylus avellana*) nut extract  
 Henna (*Lawsonia inermis*) extract  
 Hesperidin, H, methyl chalcone  
 Hibiscus sabdariffa extract  
 Hibiscus syriacus extract  
 High beta-glucan barley flour  
 Honeysuckle (*Lonicera caprifolium*) extract  
 Honeysuckle (*Lonicera japonica*) leaf extract  
 Hops (*Humulus lupulus*) extract  
 Horse chestnut (*Aesculia hippocastanum*) extract  
 Horseradish (*Cochlearia armoracia*) extract

- |    |  |   |
|----|--|---|
|    | Horsetail extract  | Nasturtium extract  |
|    | Houttuynia cordata extract   | Neroli extract  |
|    | Hyacinth (Hyacinthus orientalis) extract                           | nettle (Urtica dioica) extract                                |
|    | Hydrocotyl (Centella asiatica) extract                             | Oak (Quercus) bark extract                                    |
| 5  | Hydrolyzed oat protein, soy flour                                  | Oak root extract  |
|    | Hypericum perforatum extract                                       | Oat (Avena sativa) bran, bran extract, flour, protein         |
|    | Hyssop (Hyssopus officinalis) extract                              | Oat flower  |
|    | Indian cress (Tropaeolum majus) extract                            | Olive (Olea europaea) extract, leaf extract                   |
|    | Isodonis Japonicus extract   | Onion (Allium cepa) extract                                   |
| 10 | Ivy extract  | Orange blossom extract  |
|    | Japanese angelica (Angelica acutiloba) extract, water              | Orange (Citrus aurantium dulcis) flower extract, peel extract |
|    | Japanese hawthorn (Crataegus cuneata) extract                      | Pansy (Viola tricolor) extract                                |
|    | Jasmine (Jasminum officinale) extract                              | Papaya (Carica papaya) extract                                |
| 15 | Job's tears (Coix lacryma-jobi) extract                            | Parsley (Carum petroselinum) extract                          |
|    | Jojoba (Buxus chinensis) seed powder                               | Passion flower (Passiflora laurifolia) fruit extract          |
|    | Juniperus communis extract   | Passionflower (Passiflora incarnata) extract                  |
|    | Kelp (Macrocystis pyrifera) extract                                | Pea (Pisum sativum) extract                                   |
|    | Kiwi (Actinidia chinensis) fruit extract, seed oil                 | Peach (Prunus persica) extract, leaf extract                  |
| 20 | Kola (Cola acuminata) extract                                      | Pelargonium capitatum extract                                 |
|    | Krameria triandra extract  | Pellitory (Parietaria officinalis) extract                    |
|    | Lady's mantle (Alchemilla vulgaris) extract                        | Pennyroyal (Mentha pulegium) extract                          |
|    | Lady's Thistle (Silybum marianum) extract                          | Peony (Paeonia albaflora) extract                             |
|    | Laurel (Laurus nobilis) extract                                    | Peony (Paeonia obovata) root extract                          |
| 25 | Lavender (Lavandula angustifolia) extract, water                   | Peppermint (Mentha piperita) extract, oil                     |
|    | Lemon (Citrus medica limonum) extract, juice extract, peel extract | Perilla ocymoides extract                                     |
|    | Lemon bioflavonoids extract  | Periwinkle (Vinca minor) extract                              |
|    | Lemongrass (Cymbopogon schoenanthus) extract                       | PEG-80 jojoba acid/alcohol                                    |
| 30 | Leopard flower (Belamcanda chinensis) root extract                 | PEG-120 jojoba acid/alcohol                                   |
|    | Lettuce (Lactuca scariola sativa) extract                          | Pfaffia paniculata extract                                    |
|    | Licorice (Glycyrrhiza glabra) extract                              | Pheildendron amurense extract                                 |
|    | Lilac (Syringa vulgaris) extract                                   | Phospholipids   |
| 35 | Linden (Tilia argentea) extract                                    | pimento (Pimenta officinalis) extract                         |
|    | Linden (Tilia cordata) extract, water                              | Pine (Pinus sylvestris) cone, needle extract                  |
|    | Loquat (Eriobotrya japonica) leaf extract                          | Pineapple (Ananas sativus) extract                            |
|    | Maidenhair fern extract  | Plantain (Plantago major) extract                             |
|    | magnolia kobus extract   | Pollen extract  |
| 40 | Mallow extract   | Pongamol  |
|    | Mandragora officinarum extract                                     | Poria Cocos extract   |
|    | Mannan   | Pueraria lobata extract                                       |
|    | Marigold   | Queen of the meadow extract                                   |
|    | Marine silts   | Quillaja saponaria extract                                    |
| 45 | Matricaria (Chamomilla recutita) extract                           | Quince (Pyrus cydonia) seed extract                           |
|    | Meadowsweet (Spiraea ulmaria) extract                              | Quinoa (Chenopodium quinoa) extract                           |
|    | Melon (Cucumis melo) extract                                       | Raspberry (Rubus) extract                                     |
|    | MEA iodine   | Rauwolfia (Serpentina) extract                                |
|    | Mistletoe (Viscum album) extract                                   | Red clover  |
| 50 | Mugwort (Artemisia princeps) extract, water                        | Rehmannia chinensis extract                                   |
|    | Mulberry (Morus alba) root extract                                 | Restharrow (Ononis spinosa) extract                           |
|    | Mushroom extract   | Rhododendron chrysanthum extract                              |
|    | Myrrh (Commiphora myrrha) extract                                  | Rhodophycea extract   |
|    |  | Rhubarb (Rheum palmatum) extract                              |



- Rice (*Oryza sativa*) bran extract  
 Rice fatty acid  
 Rose' (*Rosa multiflora*) extract  
 Rosemary (*Rosmarinus officinalis*) extract  
 5 Rubia tinctorum extract  
 Safflower (*Carthamus tinctorius*) extract  
 Sage (*Salvia officinalis*) extract, water  
 Sambucus nigra berry extract, extract  
 Sandalwood (*Santalum album*) extract  
 10 Sanguinaria canadensis extract  
 Saponaria officinalis extract  
 Sasa veitchii extract  
 Saxifraga sarmentosa extract  
 Scabiosa arvensis extract  
 15 Scutellaria baicatisensis root extract  
 Silk extract  
 Silver fir (*Abies pectinata*) extract  
 Sisal (*Agave rigida*) extract  
 Slippery elm extract  
 20 Soapberry (*Sapindus mukuross*) extract  
 Sophora angustifolia extract  
 Sophora flavescens root extract  
 Sophora japonica extract  
 Soybean (*Glycine soja*) extract  
 25 Soy (*Glycine soja*) germ extract, protein, sterol  
 Spearmint (*Mentha viridis*) extract, oil  
 Spinach (*Spinacia oleracea*) extract  
 Spiraea ulmaria extract  
 Sunflower (*Helianthus annuus*) seed extract  
 30 Sweet almond (*Prunus amygdalus dulcis*) extract  
 Sweet chery (*Prunus avium*) extract  
 Sweet cicely (*Anthriscus cerefolium*) extract  
 Sweet clover (*Melilotus officinalis*) extract  
 Sweet violet (*Viola odorata*) extract  
 35 Swertia chirata extract  
 Tea (*Camellia sinensis*) extract  
 Thyme (*Thymus vulgaris*) extract  
 Tomato (*Solanum lycopersicum*) extract  
 Tormentil (*Potentilla erecta*) extract  
 40 Tuberose (*Polianthes tuberosa*) extract  
 Turmeric (*Curcuma longa*) extract  
 Valerian (*Valeriana officinalis*) extract  
 Walnut (*Juglans regia*) extract, leaf extract  
 Water Lily (*Nymphaea alba*) root extract  
 45 Watercress (*Nasturtium officinale*) extract  
 Wheat (*Triticum vulgare*) extract, protein  
 Wheat (*Triticum vulgare*) germ extract  
 Wheat bran lipids  
 White ginger (*Hedychium coronarium*) extract  
 50 White nettle (*Lamium album*) extract  
 Wild agrimony (*Potentilla anserina*) extract  
 Wild cherry (*Prunus serotina*) bark extract  
 Wild indigo (*Baptista tinctoria*)

Wild marjoram (*Origanum vulgare*) extract  
 Willow (*Salix alba*) bark extract, extract  
 Willow (*Salix alba*) leaf extract  
 Witch hazel (*Hamamelis virginiana*) extract  
 Yarrow (*Achillea millefolium*) extract  
 Yeast (*Saccheromyces cerevisiae*) extract (Faex)  
 Yucca vera extract  
 Zanthoxylum piperitum extract  
 Zedoary (*Curcuma zedoraria*) oil

#### Buffer

Ammonium carbonate, A. phoshate  
 Calcium hydroxide, C. phosphate  
 Citric acid  
 Ethanolamine HCl  
 Glycine  
 Phosphoric acid  
 Potassium phosphate  
 Potassium sodium tartrate  
 Sodium acetate, S. citrate  
 Sodium lactate, S. phosphate  
 Succinic acid  
 Tromethamine

#### Carrier

Acrylates copolymer, spherical powder  
 Arginine  
 Caprylic/capric triglyceride  
 Caprylic/capric/lauric triglyceride  
 Caprylic/capric/oleic triglyceride  
 Cetareth-20  
 Coconut (*Cocos nucifera*) oil  
 Cyclodextrin  
 Dipropylene glycol  
 Glyceryl caprylate, G. caprylate/caprare  
 Hydrated silica  
 Liposomes  
 magnesium silicate  
 Methyl propanediol  
 PEG-8/SMDI copolymer  
 Potassium chloride  
 PPG-12/SMDI Copolymer  
 PPG-51/SMDI Copolymer  
 Propylene carbonate, P. glycol  
 Serum albumin  
 Sodium carboxymethyl beta-glucan  
 Sodium chloride  
 sodium magnesium silicate  
 Tapioca dextrin

#### Chelators

beta-Alanine diacetric acid  
 Calcium disodium EDTA

- Disodium EDTA, -copper  
EDTA  
HEDTA  
Malic acid  
5 Monostearyl citrate  
Pentasodium pentetate  
Pentetic acid  
Phytic acid  
Potassium aspartate  
10 Sodium aspartate  
Sodium dihydroxyethylglycinate  
Sodium hexametaphosphate  
Tetrahydroxypropyl ethylenediamine  
Tetrasodium EDTA  
15 Tripotassium EDTA  
Trisodium EDTA, HEDTA
- Cell stimulant  
Aesculus chinensis extract  
20 Artemisia apiacea extract  
Astrocaryum muru, A. tucuma extract  
Bactris gasipaes extract  
Borjoa sorbilis extract  
Calendula amurensis extract  
25 Chrysanthemum morifolium extract  
Coccinea indica extract  
Comfrey (Symphytum officinale) leaf extract  
Condurango extract  
Dandelion (Taraxacum officinale) extract  
30 Echitea glauca extract  
Equisetum arvense extract  
Eucalyptus (Eucalyptus globulus) extract  
Euphorium fortunei extract  
Euterpe precatoria extract  
35 Ficus racemosa extract  
Glycoproteins  
Hierochloe odorata extract  
Horse chestnut (Aesculia hippocastanum) extract  
Inga edulis extract  
40 Kadsura heteliloca extract  
Ligustrum lucidum extract  
Lysimachia foenum-graecum extract  
Mauritia flexosa extract  
Maximilliana regia extract  
45 Melaleuca bracteata, M. symphyocarp extract  
Nelumbium speciosum extract  
Ocimum basilicum extract, O. santum extract  
Paulownia imperialis extract  
Pfaffia spp. extract  
50 Pterocarpus marsupianus extract  
Rubus thunbergii extract  
Selinum spp. extract  
Shorea robusta extract

Xanthozylum bungeanum extract

Cleansing

Birch (Betula alba) leaf extract  
Lemongrass (Cymbopogon schoenanthus) extract  
Oat (Avena sativa) bran extract  
Passion flower (Passiflora laurifolia) fruit extract  
Witch hazel (Hamamelis virginiana) extract  
Yarrow (Achillea millefolium) extract

Conditioner

Acetamide MEA  
6-(N-Acetylamino)-4-oxyhexyltrimonium  
chloride  
Acrylamidopropyltrimonium chloride/acrylamide  
copolymer  
Adipic acid/dimethylaminohydroxypropyl  
diethylene triamine copolymer  
AMP-isostearoyl hydrolyzed wheat protein  
Apricot (Prunus armeniaca) kernel oil  
Behenalkonium chloride  
Behenamidopropyl dihydroxypropyl dimonium  
chloride  
Benhenamidopropyl ethyldimonium ethosulfate  
Benhenamidopropyl PG-dimonium chloride  
Behenamidopropyldimethylamine behenate  
Behenamine oxide  
Behenoyl PG-trimonium chloride  
Behenyl betaine  
Benzyltrimonium hydrolyzed collagen  
Canolamidopropyl betain  
Capramide DEA  
Caprylic/capric/lauric triglyceride  
Caprylyl pyrrolidone  
Cassia auriculata extract  
Cetamine oxide  
Cetearalkonium chloride  
Chitosan PCA  
Citric acid  
Cocamidopropyl dimethylamine, C.d. lactate,  
C.d. propionate  
Cocamidopropyl dimethylaminohydroxypropyl  
hydrolyzed collagen  
Cocamidopropyldimonium  
hydroxypropylhydrolyzed collagen  
Cocamidopropyl ethyldimonium ethosulfate  
Cocamidopropyl PG-dimonium chloride, C.P.c.  
phosphate  
Coco-morpholine oxide  
Coco/oleamidopropyl betaine  
Cocodimonium hydroxypropyl hydrolyzed hair  
keratin

	Cocodimonium hydroxypropyl hydrolyzed rice protein	Hydroxycetyl hydroxyethyl dimonium chloride
	Cocodimonium hydroxypropyl hydrolyzed silk	Hydroxyproline
	Cocodimonium hydroxypropyl hydrolyzed soy protein	Hydroxypropyl chitosan
5	Cocomut alcohol	Hydroxypropyl guar hydroxypropyltrimonium chloride
	N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate	Hydroxypropyl-bis-isostearamidopropyl dimonium chloride
	Collagen phthalate	Hydroxypropyl bis-stearyl dimonium chloride
10	Dibehenyl/diarachidyl dimonium chloride	Hydroxypropyltrimonium gelatin
	Dibehenyldimonium chloride	Hydroxypropyltrimonium hydrolyzed keratin
	Dicetyldimonium chloride	H.h. silk
	Didecyldimonium chloride	Hydroxypropyltrimonium hydrolyzed wheat protein
	Dihydroxyethyl cocamine oxide	Isopropyl hydroxybutyramide dimethicone copolyol
15	Dihydroxyethyl dihydroxypropyl stearamonium chloride	Isopropyl lanolate
	Dihydroxyethyl tallow glycinate	Isostearamidopropyl betaine, I. dimethylamine
	Dihydroxyethyl tallowamine oxide	Isostearamidopropyl dimethylamine gluconate
	Dilauryl acetyl dimonium chloride	Isostearamidopropyl dimethylamine glycolate
20	Dilinoleamidopropyl dimethylamine	Isostearamidopropyl dimethylamine lactat
	Dimethyl hydrogenated tallowamine	Isostearamidopropyl ethyldimonium ethosulfate
	Dimethyl lauramine, D.I. isostearate	Isostearamidopropyl laurylaceto dimonium chloride
	Dimethyl myristamine, soyamine, stearamine	Isostearamidopropyl morpholine, I.m. lactate
	Dimethylamidopropylamine dimerate	Isostearamidopropyl morpholine oxide
25	Disodium hydrogenated cottonseed glyceride sulfosuccinate	Isostearamidopropyl PG-dimonium chloride
	Disodium laureth sulfosuccinate	Isostearaminopropalkonium chloride
	Disodium lauroamphodiacetate	Isostearyl hydrolyzed animal protein
	Distearyldimonium chloride	Isostearylamidopropyl dihydroxypropyl dimonium chloride
30	Ethyl ester of hydrolyzed keratin	Lactoglobulin
	N-Ethylether-bis-1,4-(N-isostearylamidopropyl)-N,N-dimethyl ammonium chlo	Lauramidopropyl dimethylamine
	Glutamic acid	Lauramidopropyl PG-dimonium chloride, I.P.c. phosphate
	Glyceryl collagenate	Lauramine oxide
35	Glycine	Lauroampho PG-glycinate phosphate
	Guar hydroxypropyltrimonium chloride	Lauroyl hydrolyzed collagen, L.h. elastin
	Henna (Lawsonia inermis) extract	Lauroyl silk amino acids
	Hydrogenated tallowamine oxide	Lauryl methyl gluceth-10 hydroxypropyl-dimonium chloride
	Hydrogenated tallowtrimonium chloride	Lauryl phosphate, L. pyrrolidone
40	Hydrolyzed conchiorin protein	Lauryldimonium hydroxypropyl hydrolyzed collagen, keratin, soy protein
	Hydrolyzed egg protein	Linoleamidopropyl dimethylamine
	Hydrolyzed extensin	Milk amino acids
	Hydrolyzed fibronectin	Milk protein (Lactis proteinum)
	Hydrolyzed fish protein	Myristalkonium chloride
45	Hydrolyzed keratin	Myristamidopropyl betaine, M. dimethylamine
	Hydrolyzed lactalbumin	Myrtrimonium bromide
	Hydrolyzed milk protein	Oat (Avena sativa) protein
	Hydrolyzed oats	Oleamide
	Hydrolyzed reticulin	Oleamidopropyl betaine, O. dimethylamine
50	Hydrolyzed soy protein	
	Hydrolyzed sweet almond protein	
	Hydrolyzed wheat protein/PVP copolymer	
	Hydrolyzed wheat protein polysiloxane polymer	

	Oleamidopropyl dimethylamine hydrolyzed collagen		Rice peptide
	Oleamidopropylamine oxide		Ricinoleamidopropyl-dimonium ethosulfate
	Oleamine		Ricinoleamidopropyl betaine
5	Oleamine oxide		Ricinoleamidopropyl dimethylamine lactate
	Oleoyl sarcosine		Ricinoleamidopropyl ethyldimonium ethosulfate
	Oleyl betaine		Ricinoleamidopropyltrimonium chloride
	Oleyl dimethylamidopropyl ethonium ethosulfate		Ricinoleamidopropyltrimonium ethosulfate
	Palmitamidopropyl betaine		Silicone quaternium-3, -4
10	Palmitamidopropyl dimethylamine		Silk amino acids
	Palmitamine, P. oxide		Sodium/TEA-lauroyl collagen amino acids
	Panthenyl hydroxypropyl steardimonium chloride		Sodium/TEA-lauroyl hydrolyzed keratin
	PEG-2 milk solids		Sodium/TEA-lauroyl keratin amino acids
	PEG-2 oleammonium chloride		Sodium citrate
15	PEG-3 lauramine oxide		Sodium cocoyl hydrolyzed soy protein
	PEG-5 stearyl ammonium lactate		Sodium hydrogenated tallow dimethyl glycinate
	PEG-15 cocomonium chloride		Sodium lauroyl collagen, keratin amino acids
	PEG-15 cocopolyamine		Sodium lauroyl wheat amino acids
	PEG-15 tallowmonium chloride		Sodium stearoamphoacetate
20	PEG-27		Soluble keratin, wheat protein
	PEG-40		Soyamide DEA
	PEG-85 lanolin		Soyamidopropyl benzyltrimonium chloride
	PEG-7000		Soyamidopropyl betaine, S. dimethylamine
	Polydimethicone copolyol		Soyamidopropyl ethyldimonium ethosulfate
25	Polymethacrylamidopropyltrimonium chloride		Soyethyl morpholinium ethosulfate
	Polyoxyethylene dihydroxypropyl linoleaminium chloride		Soyethyldimonium ethosulfate
	Polyquaternium-2, -5, -6, -11, -16		Stearamide MEA
	Polyquaternium-17, -18, -24, -29, -44		Stearamidoethyl diethylamine, ethanolamine
30	Potassium dimethicone copolyol panthenyl phosphate		Stearamidopropyl benzyl dimonium chloride
	Potassium lauroyl collagen amino acids		Searamidopropyl cetearyl dimonium tosylate
	Potassium lauroyl hydrolyzed soy protein		Stearamidopropyl dimethylamine stearate
	Potassium lauroyl wheat amino acids		Stearamidopropyl ethyldimonium ethosulfate
35	Potassium stearyl hydrolyzed collagen		Stearamidopropyl morpholine lactate
	PPG-5 lanolin alcohol ether		Stearamidopropyl PG-dimonium chloride
	PPG-9 diethylmonium chloride		phosphate
	PPG-20 lanolin alcohol ether		Stearmine oxide
	Proline		Steardimonium hydroxypropyl hydrolyzed collagen, keratin
40	Propylene glycol stearate		Steardimonium panthenol
	PVP/dimethiconylacrylate/polycarbamyl/polyglycol ester		Stearoyl amidoethyl diethylamine
	PVP/dimethylaminoethylmethacrylate copolymer		Steartrimonium bromide
45	PVP/dimethylaminoethylmethacrylate/polycarbamyl/polyglycol ester		Stearyl dimethicone
	PVP/hydrolyzed wheat protein copolymer		Tallowamidopropyl dimethylamine
	Quaternium-22, -26, -33, -61, -62, -70, -80		Tetramethyl trihydroxy hexadecane
	Quaternium-76 hydrolyzed collagen		TEA-cocoyl hydrolyzed collagen
50	Rapeseedamidopropyl benzyltrimonium chloride		Trachea hydrolysate
	Rapeseedamidopropyl epoxypropyl dimonium chloride		Tricetylmonium chloride
	Rapeseedamidopropyl ethyldimonium ethosulfate		Tridecyl salicylate
			Triethonium hydrolyzed collagen ethosulfate
			Wheat germamidopropalkonium chloride
			Wheat germamidopropyl dimethylamine lactate
			Wheat germamidopropyl ethyldimonium ethosulfate
			Wheat peptide

	Yeast powder, deproteinated		Ammonium laureth sulfate
	<u>Coupling agent</u>		Ammonium lauryl sulfate
	Acetyl monoethanolamine		Capramide DEA
5	Butyloctanol		Cocamidopropyl dimethylamine lactate
	Myreth-3		Decyl glucoside
	Oleyl alcohol		Decyltetradeceth-25
	PPG-10 butanediol		DEA lauryl sulfate
	PPG-10 cetyl ether		Diamyl sodium sulfosuccinate
10	PPG-10 oleyl ether		Dicyclohexyl sodium sulfosuccinate
	PPG-15 stearyl ether		Diisobutyl sodium sulfosuccinate
	PPG-22 butyl ether		Disodium caproamphodiacetate
	PPG-23 oleyl ether		Disodium caproamphodipropionate
	PPG-50 oleyl ether		Disodium capryloamphodiacetate
15	Trideceth-7 carboxylic acid		Disodium capryloamphodipropionate
	<u>Denaturant</u>		Disodium cetearyl sulfosuccinate
	Brucine sulfate		Disodium cocamido MEA-sulfosuccinate
	Denatonium benzoate, saccharide		Disodium cocamido MIPA-sulfosuccinate
20	Nicotine sulfate		Disodium cocoamphodipropionate
	Sucrose octaacetate		Disodium deceth-6 sulfosuccinate
	Thymol		Disodium isodecyl sulfosuccinate
	<u>Dental powder</u>		Disodium lauramido MEA-sulfosuccinate
25	Dicalcium phosphate		Disodium lauramido PEG-2 sulfosuccinate
	Silica		Disodium laureth sulfosuccinate
	Sodium monofluorophosphate		Disodium lauroamphodiacetate
	Stannous fluoride		Disodium lauroamphodipropionate
30	<u>Deodorant</u>		Disodium lauryl sulfosuccinate
	Abietic acid		Disodium myristamido MEA-sulfosuccinate
	Azadirachta indica extract		Disodium nonoxynol-10 sulfosuccinate
	Chlorophyllin-copper complex		Disodium oleamido PEG-2 sulfosuccinate
	Eugenia jambolana extract		Disodium PEG-4 cocoamido MIPA-sulfosuccinate
35	Farnesol		Disodium ricinoleamido MEA-sulfosuccinate
	Fermented vegetable		Disodium tallowiminodipropionate
	Mauritia flexosa extract		Dodecylbenzene sulfonic acid
	Salvia miltiorrhiza extract		Dodoxynol-6, -9
	Sodium aluminum chlorohydroxy lactate		Isopropylamine dodecylbenzenesulfonate
40	Spondias amara extract		Isostearamidopropyl betaine
	Triethyl citrate		Isosteareth-6 carboxylic acid
	Zinc phenol sulfonate, Z. ricinoleate		Isostearoamphopropionate
	<u>Depilatory</u>		Isostearyl hydroxyethyl imidazoline
45	Barium sulfide		Lauramidopropylamine oxide
	Beeswax, oxidized		Laureth-11
	Calcium thioglycolate		Lauroampho PG-glycinate phosphate
	L-cysteine HCL		Lauryl glucoside, L. phosphate
	Potassium thioglycolate		Magnesium laureth sulfate, M. lauryl sulfate
50	Sodium thioglycolate		Magnesium PEG-3 cocamide sulfate
	Thioglycerin		MEA-dodecylbenzenesulfonate
	<u>Detergent</u>		MEA-laureth sulfate
			MEA-lauryl sulfate
			MIPA-lauryl sulfate
			Myristamine oxide
			Myristic acid
			Nonoxynol-10

- PEG-25 castor oil  
 PEG-30 dipolyhydroxystearate  
 PEG-40 hydrogenated castor oil PCA isostearate  
 PEG-60 shea butter glycerides  
 5 Poloxamer 101, 122, 181, 182, 184  
 Polyglyceryl-2 sesquiosostearate  
 Polyglyceryl-3 diisostearate, oleat  
 Polyglyceryl-5 distearate  
 Polyglyceryl-6 mixed fatty acids  
 10 Polyglyceryl-10 diisostearate, distearate  
 Polyglyceryl-10 decaoleate  
 Polyhydroxystearic acid  
 Polysorbate 40, 80  
 Potassium polyacrylate  
 15 PPG-3 PEG-6 oleyl ether  
 PPG-9 diethylmonium phosphate  
 PPG-12/SMDI Copolymer  
 PPG-15 stearyl ether  
 PPG-25, PPG-40 diethylmonium chloride  
 20 PPG-51/SMDI Copolymer  
 PVP/eicosene copolymer  
 PVP/hexadecene copolymer  
 Rapeseed oil, ethoxylated high erucic acid  
 Ricinoleyl alcohol  
 25 Sodium ceteth-13-carboxylate  
 Sodium lignosulfonate, S. polymethacrylate  
 Sodium polynaphthalenesulfonate  
 Sorbitan oleate  
 Steareth-10  
 30 Tricontanyl PVP  
 Triisostearin PEG-6 esters  
 Trioctylidodecyl citrate
- Emollient**
- 35 Acetylated glycol stearate  
 Acetylated hydrogenated lanolin  
 Acetylated hydrogenated lard glyceride  
 Acetylated hydrogenated vegetable glyceride  
 Acetylated lanolin, A.I. alcohol  
 40 Acetylated lard glyceride  
 Acetylated monoglycerides  
 Acetylated palm kernel glycerides  
 Aleurites moluccana ethyl ester  
 Allantoin  
 45 Aluminum/magnesium hydroxide stearate  
 AMP-isostearoyl hydrolyzed soy protein  
 Apricot (*Prunus armeniaca*) karnel oil  
 Arachidyl behenate  
 Argania spinosa oil  
 50 Avocado (*Persea gratissima*) oil, unsaponifiables  
 Avocado oil ethyl ester  
 Babassu (*Orbignya oleifera*) oil  
 Baryl isostearate, B. stearate  
 Behenamidopropyl dihydroxypropyl dimonium chloride  
 Behenoxy dimethicone  
 Behenyl alcohol, B. behenate  
 Behenyl erucate, B. isostearate  
 Benzyl laurate  
 Bladderwrack (*Fucus vesiculosus*) extract  
 Borage (*Borago officinalis*) seed oil  
 Borageamidopropyl phosphatidyl PG-dimonium chloride  
 Brain extract  
 Brazil nut (*Bertholletia excelsa*) oil  
 Butyl myristate, oleate, stearate  
 Butyloctanol  
 Butyloctyl oleate  
 C12-13, C12-16, C14-15 alcohols  
 C12-15 alcohols octanoate  
 C12-15 alkyl benzoate  
 dl-C12-15 alkyl fumarate  
 C12-15 alkyl lactate  
 Camellia kissi oil  
 Tea (*Camellia sinensis*) oil  
 C10-30 cholesterol/lanostearol esters  
 Canola oil  
 Caprylic/capric triglyceride  
 Caprylic/capric triglyceride PEG-4 esters  
 Caprylic/capric/lauric triglyceride  
 Caprylic/capric/linoleic triglyceride  
 Caprylic/capric/oleic triglycerides  
 Caprylic/capric/stearic triglyceride  
 Caprylic/capric/succinic triglyceride  
 Capsicum frutescens oleoresin  
 Carrot (*Daucus carota sativa*) oil  
 Cashew (*Anacardium occidentale*) nut oil  
 Castor (*Ricinus communis*) oil  
 Cetearyl behenate, C. candelillate  
 Cetearyl isononanoate, C. octanoate  
 Cetearyl palmitate, C. stearate  
 Ceteth-10  
 Cetostearyl stearate  
 Cetyl C12-15 pareth-9 carboxylate  
 Cetyl acetate, C. alcohol  
 Cetyl esters, C. lactate  
 Cetyl myristate, C. octanoate  
 Cetyl oleate, C. palmitate  
 Cetyl PPG-2 isodeceth-7 carboxylate  
 Cetyl ricinoleate, C. stearate  
 Cetyl stearyl octanoate  
 Chia (*Salvia hispanica*) oil  
 Cholesteric esters  
 Cholesterol  
 Cholesteryl/behenyl/octyldodecyl lauroyl glutamate

Oleoamphohydroxypropyl sulfonate  
 Oleth-12, -15  
 Oleyl betaine  
 Palmitamidopropyl betaine  
 5 PEG-10 glyceryl stearate  
 PEG-15 glyceryl stearate  
 PEG-25 glyceryl isostearate  
 Potassium cocoyl hydrolyzed collagen  
 Sodium caproamphoacetate  
 10 Sodium cocoamphoacetate  
 Sodium cocoamphopropionate  
 Sodium cocomonoglyceride sulfate  
 Sodium cocoyl hydrolyzed soy protein  
 Sodium cocoyl isethionate  
 15 Sodium C12-15 pareth-25 sulfate  
 Sodium C14-16 olefin sulfonate  
 Sodium C14-17 alkyl sec sulfonate  
 Sodium deceth sulfate  
 Sodium decyl diphenyl ether sulfonate  
 20 Sodium dodecylbenzenesulfonate  
 Sodium dodecylidiphenyl ether sulfonate  
 Sodium iodate  
 Sodium laureth-2 sulfate  
 Sodium laureth-3 sulfate  
 25 Sodium laureth-7 sulfate  
 Sodium laureth-12 sulfate  
 Sodium laureth-13-carboxylate  
 Sodium laureth sulfate  
 Sodium lauriminodipropionate  
 30 Sodium lauroamphopropionate  
 Sodium lauroyl methyl alaninate  
 Sodium lauryl phosphate, S.I. sulfate  
 Sodium lauryl sulfoacetate  
 Sodium methyl oleoyl taurate  
 35 Sodium methyl cocoyl taurate  
 Sodium methyl lauroyl taurate  
 Sodium methylnaphthalenesulfonate  
 Sodium myreth sulfate  
 Sodium myristyl sulfate  
 40 Sodium octyl sulfate, oleyl sulfate  
 Sodium POE alkyl ether acetate  
 Sodium trideceth-7 carboxylate  
 Sodium trideceth sulfate  
 Sodium tridecyl sulfate  
 45 Steareth-11, -30  
 TEA-dodecylbenzenesulfonate  
 TEA-laureth sulfate  
 TEA-lauryl sulfate  
 TEA-palm kernel sarcosinate  
 50 TEA-PEG-3 cocamide sulfate  
 Undecylenamidopropyl betaine

**Disinfectant**

Benzalkonium chloride  
 Chlorophene  
 Didecyldimonium chloride  
 Myristalkonium saccharinate  
 Shikonin  
 Sodium capryloamphoacetate  
 Tea tree (*Melaleuca alternifolia*) oil  
 p-Tertarylphenol

**Dispersant**

Alkylated polyvinylpyrrolidone  
 C20-40, C30-50, C40-60 alcohols  
 Castor (*Ricinus communis*) oil  
 Cetareth-20  
 Cetyl PPG-2 isodeceth-7 carboxylate  
 Cholesteryl/behenyl/octyldodecyl lauroyl  
 glutamate  
 Decaglycerol monodiolate  
 Diisocetyl dodecanedioate  
 Diisostearyl adipate  
 Dimethicone copolyol methyl ether  
 Dioctyldodecyl dimer diinoleate  
 Dioctyldodecyl dodecanedioate  
 Ethyl hydroxymethyl oleyl oxazoline  
 Glyceryl caprylate, G. caprylate/caprate  
 Glyceryl diisostearate  
 Hydrogenated castor oil, H. lecithin  
 Hydrogenated tallow glycerides  
 Isobutylene/MA copolymer  
 Isocetyl alcohol  
 Isopropyl C12-15-pareth-9-carboxylate  
 Isostearyl neopentanoate  
 Lanolin acid  
 Laureth-4, -6, -16  
 Melanin  
 Nonoxynol-2, -18, -20, -30, -40  
 Octoxynol-5, -10  
 Octoxynol 16, 30, 40, 70  
 Octyldodeceth-5  
 Octyldodecyl/dimethicone copolyol citrate  
 Oleth-40  
 Oleyl alcohol  
 PEG-5 castor oil, glyceryl sesquioleate  
 PEG-6 beeswax  
 PEG-8/SMDI copolymer  
 PEG-9 castor oil, oleate, stearate  
 PEG-10 dioleate, stearamine  
 PEG-12 beeswax  
 PEG-12 glyceryl dioleate, laurate  
 PEG-15 castor oil  
 PEG-20 almond glycerides  
 PEG-20 glyceryl isostearate  
 PEG-20 sorbitan triisostearate

- |    |   |   |
|----|---|---|
|    | Cholesteryl hydroxystearate   | Dimethiconol stearate                             |
|    | Cholesteryl stearate  | Dimethyl lauramine oleate                         |
|    | Choleth-24  | Diocetyl adipate                                  |
|    | C18-70 Isoparaffin  | Diocetyl dimer dilinoleate                        |
| 5  | C10-18, C12-18 triglycerides  | Diocetylcyclohexane                               |
|    | C12-15 linear alcohols 2-ethylhexanoate   | Diocetyldodecyl dimer dilinoleate                 |
|    | Cocamidopropyl PG-dimonium chloride   | Diocetyldodecyl dodecanedioate                    |
|    | Cocoa (Theobroma cacao) butter  | Diocetyl malate, D. sebacate, succinate           |
|    | Coco-caprylate/caprate  | Dipentaerythritol fatty acid ester                |
| 10 | Coco-rapeseedate  | Dipentaerythrityl hexacaprylate/hexacaprate       |
|    | Coconut (Cocos nucifera) oil  | Dipentaerythrityl hexahydroxystearate/isostearate |
|    | Cocoyl hydrolyzed soy protein   | Distearyldimethylamine dilinoleate                |
|    | Collagen hthalate   | Ditridecyl adipate                                |
|    | Colloidal oatmeal   | Dog rose (Rosa canina) hips oil                   |
| 15 | Comfrey (Symphytum officinale) leaf extract                                       | Egg (Ovum) yolk extract                           |
|    | Corn (Zea mays) oil   | Emu (Dromiceius) oil                              |
|    | Corn poppy (Papaver rhoeas) extract   | Erucyl erucate                                    |
|    | Cottonseed (Gossypium) oil  | Ethyl avocadate                                   |
|    | Cuttlefish extract  | Ethylhexyl isopalmitate                           |
| 20 | Cyclomethicone  | 2-Ethylhexyl isostearate                          |
|    | Deceth-4 phosphate  | Ethyl linoleanate, E. minkate                     |
|    | Decyl oleate  | Ethyl morrhuate, E. myristate                     |
|    | Decyltetradecanol   | Ethyl oleate, E. olivate                          |
|    | Dialkydimethylpolysiloxane  | Evening primrose (Oenothera biennis) extract, oil |
| 25 | Dibutyl sebacate  | Glycereth-4,5-lactate                             |
|    | Dicapryl adipate  | Glycereth-5 lactate                               |
|    | Dicaprylyl ether, D. maleate  | Glycereth-7 benzoate                              |
|    | Diethylene glycol diisononanoate  | Glycereth-7 diisononanoate                        |
|    | Diethylene glycol dioctanoate   | Glycereth-7 triacetate                            |
| 30 | bis-Diglyceryl/caprylate/caprate/isostearate/<br>hydroxystearate/adipate          | Glycereth-7 trioctanoate                          |
|    | bis-Diglyceryl/caprylate/caprate/isosteareth/<br>stearate/hydroxystearate/adipate | Glycereth-12, -26                                 |
|    | Dihydroabietyl behenate   | Glycerol tricaprylate/caprate                     |
| 35 | Dihydroxyethyl tallowamine oleate   | Glycerol adipate, G. dioleate                     |
|    | Diisobutyl adipate  | Glycerol isostearate, G. lanolate                 |
|    | Diisocetyl adipate, dodecanedioate  | Glycerol linoleate, G. monopyroglutamate          |
|    | Diisodecyl adipate  | Glycerol myristate, G. oleat                      |
|    | Diisopropyl adipate, dimer dilinoleate  | Glycerol ricinoleate                              |
| 40 | Diisopropyl sebacate  | Glycerol triacetyl hydroxystearate                |
|    | Diisostearoyl trimethylolpropane siloxy silicate                                  | Glycerol triacetyl ricinoleate                    |
|    | Diisostearyl adipate  | Glycosaminoglycans                                |
|    | Diisostearyl dimer dilinoleate  | Glycosophingolipids                               |
|    | Diisostearyl fumarate, D. malate  | Gold of Pleasure oil                              |
| 45 | Dilinoleic acid   | Grape (Vitis vinifera) seed oil                   |
|    | Dimethicone   | Hazel (Corylus avellana) nut oil                  |
|    | Dimethicone copolyol  | Helianthus annuum ethyl ester                     |
|    | Dimethicone copolyol acetate, D.c. almondate                                      | Hexadecyl isopalmitate                            |
|    |   | Hexamethyldisiloxane                              |
| 50 | Dimethicone copolyol isostearate, D.c. lactate                                    | hexyl laurate                                     |
|    | Dimethicone copolyol methyl ether   | hexyldecanol                                      |
|    | Dimethicone copolyol phthalate  | Hexyldecyl stearate                               |
|    | Dimethicone propylethylenediamine behenate  | honey extract                                     |
|    |   | Hybrid safflower (Carthamus tinctorius) oil       |
|    |   | Hybrid sunflow (Helianthus annus) oil             |



- |    |   |   |
|----|---|---|
|    | Hydrogenated C6-14 olefin polymers                  | Isosorbide laurate                              |
|    | Hydrogenated castor oil                             | Isostearic acid                                 |
|    | Hydrogenated castor oil laurate                     | Isostearyl alcohol                              |
|    | hydrogenated coconut oil                            | Isostearyl behenate, I. benzoate                |
| 5  | Hydrogenated cottonseed oil                         | Isostearyl diglyceryl succinate                 |
|    | Hydrogenated C12-18 triglycerides                   | Isostearyl erucate, I. erucyl erucate           |
|    | Hydrogenated lanolin                                | Isostearyl isostearate, I. lactate              |
|    | Hydrogenated lanolin, distilled                     | Isostearyl malate, I. myristate                 |
|    | Hydrogenated lecithin                               | Isostearyl neopentanoate, palmitate             |
| 10 | Hydrogenated milk lipids                            | Isostearyl stearoyl stearate                    |
|    | Hydrogenated mink oil                               | Isostearylamidopropyl dihydroxypropyl           |
|    | Hydrogenated palm kernel glycerides                 | dimonium chloride                               |
|    | Hydrogenated palm oil                               | Isotridecyl isononanoate                        |
|    | Hydrogenated polyisobutene                          | Isotridecyl myristate                           |
| 15 | Hydrogenated soybean oil                            | Jojoba ( <i>Buxus chinensis</i> ) oil           |
|    | Hydrogenated starch hydrolysate                     | Jojoba butter, J. esters                        |
|    | Hydrogenated tallow glyceride                       | Jojoba oil, synthetic                           |
|    | Hydrogenated tallow glyceride lactate               | Kukui ( <i>Aleurites molaccana</i> ) nut oil    |
|    | Hydrogenated turtle oil                             | Lactamide DGA                                   |
| 20 | Hydrogenated vegetable glycerides                   | Laneth-10 acetate                               |
|    | Hydrogenated vegetable oil                          | Lanolin, L. acid                                |
|    | Hydrolyzed collagen                                 | Lanolin alcohol, L. oil                         |
|    | Hydrolyzed conchiorin protein                       | Lanolin, ultra anhydrous                        |
|    | Hydrolyzed keratin                                  | Lanolin wax                                     |
| 25 | Hydrolyzed mushroom ( <i>Tricholoma matsutake</i> ) | Laostearol                                      |
|    | extract   | Lard glyceride                                  |
|    | Hydrolyzed oat protein                              | Laureth-2, -3                                   |
|    | Hydroxylated lanolin                                | Laureth-2 acetate, L. benzoate                  |
|    | Hydrolylated milk glycerides                        | Laureth-2-octanoate                             |
| 30 | Hydroxystearic acid                                 | Lauric/palmitic/oleic triglyceride              |
|    | butter  | Lauryl behenate, L. lactate                     |
|    | Isobutyl palmitate, I. stearate                     | Lauryl phosphae                                 |
|    | Isocetyl behenate, I. octanoate                     | Lauryldimethylamine isostearate                 |
|    | Isocetyl palmitate, I. salicylate                   | Lesquereila fendleri oil                        |
| 35 | Isocetyl stearate                                   | Linoleic acid                                   |
|    | Isodeceth-2 cocoate                                 | Macadamia ternifolia nut oil                    |
|    | Isodecyl citrate, I. cocoate                        | Maleated soybean oil                            |
|    | Isodecyl isononanoate, I. laurate                   | Mango ( <i>Magnifera indica</i> ) oil, seed oil |
|    | Isodecyl neopentanoate                              | Mango kernel oil                                |
| 40 | Isodecyl octanoate, I. oleate                       | Meadowfoam ( <i>Limnanthes alba</i> ) seed oil  |
|    | Isodecyl stearate                                   | Menbaden ( <i>Brevoortia tyrannus</i> ) oil     |
|    | Isododecane   | Methyl acetyl ricinoleate                       |
|    | Isoeicosane   | Methyl gluceth-20                               |
|    | Isohexadecane                                       | Methyl gluceth-20 benzoate, M.g. distearate     |
| 45 | isononyl isononanoate                               | Methyl hydroxystearate, M. ricinoleate          |
|    | Isopentyl diol                                      | Microcrystalline wax                            |
|    | Isopropyl avocadate                                 | Mineral oil ( <i>Paraffinum liquidum</i> )      |
|    | Isopropyl C12-15-pareth-9-carboxylate               | Mink oil  |
|    | Isoproyl isostearate                                | Musk rose ( <i>Rosa moschata</i> ) oil          |
| 50 | Isopropyl lanolate, I. linoleate                    | Myreth-3  |
|    | Isopropyl myristate, I. palmitate                   | Myreth-3 caprate, M. laurate                    |
|    | Isopropyl PPG-2-isodeceth-7 carboxylate             | Myreth-3 myristate, M. octanoate                |
|    | Isopropyl sterate                                   | Myristyl alcohol, M. lactate                    |

- Myristyl myristate, M. octanoate  
 Myristyl propionate, M. stearate  
 Neatsfoot oil  
 Neem (*Melia azadirachta*) seed oil  
 5 Neopentyl glycol dicaprate  
 Neopentyl glycol dicaprate/dicaprylate  
 Neopentyl glycol diisooctanoate  
 Neopentyl glycol dioctanoate  
 Oat (*Avena sativa*) bran extract, extract, flour  
 10 Octacosanyl stearate  
 Octyl cocoate  
 Octyl hydroxystearate, O. isononanoate  
 Octyl neopentanoate, O. octanoate  
 Octyl oleate, O. palmitate  
 15 Octyl pelargonate, O. stearate  
 Octyldecanol  
 Octyldodecanol  
 Octyldodecyl behenate, O. benzoate  
 Octyldodecyl erucate, O. myristate  
 20 Octyldodecyl oleate, O. ricinoleate  
 Octyldodecyl stearate  
 bis-Octyldodecyl stearyl dimer dilinoleate  
 Octyldodecyl stearyl stearate  
 Oleamine oxide  
 25 Oleic/palmitoleic/linoleic glycerides  
 Oleic alcohol  
 Oleostearine  
 Oleyl alcohol, O. erucate, O. oleate  
 Olive (*Olea europae*) oil  
 30 Orange (*Citrus aurantium dulcis*) peel wax  
 Orange roughy (*Hoplostethus atlanticus*) oil  
 Palm (*Elaeis guineensis*) oil  
 Palm kernel glycerides  
 Palmitic acid  
 35 Panthenyl triacetate  
 Partially hydrogenated canola oil  
 Partially hydrogenated soybean oil  
 Peach (*Prunus persica*) extract  
 Peanut (*Arachis hypogaea*) oil  
 40 PEG-2 diisononanoate, P. dioctanoate  
 PEG-2 milk solids  
 PEG-4  
 PEG-4 diheptanoate, P. dilaurate  
 PEG-5 C8-12 alcohols citrate  
 45 PEG-5 C14-18 alcohols citrate  
 PEG-5 hydrogenated castor oil  
 PEG-5 hydrogenated castor oil triisostearate  
 PEG-6  
 PEG-6 capric/caprylic glycerides  
 50 PEG-7 glyceryl cocoate  
 PEG-8  
 PEG-8 dilaurate, P. dioleate  
 PEG-8/SMDI copolymer  
 PEG-9 stearyl stearate  
 PEG-10 stearyl stearate  
 PEG-12  
 PEG-12 dioleate, P. palm kernel glycerides  
 PEG-15 cocamine oleate/phosphate  
 PEG-18  
 PEG-20  
 PEG-20 hydrogenated castor oil isostearate  
 PEG-20 hydrogenated castor oil triisostearate  
 PEG-20 hydrogenated lanolin  
 PEG-24 hydrogenated lanolin  
 PEG-25 PABA, P. propylene glycol stearate  
 PEG-40 glyceryl laurate  
 PEG-40 hydrogenated castor oil isostearate  
 PEG-40 hydrogenated castor oil laurate  
 PEG-40 hydrogenated castor oil triisostearate  
 PEG-40 jojoba oil  
 PEG-50 hydrogenated castor oil laurate  
 PEG-50 hydrogenated castor oil triisostearate  
 PEG-60 shea butter glycerides  
 PEG-70 mango glycerides  
 PEG-75  
 PEG-75 lanolin, P. shea butter glycerides  
 PEG-75 shorea butter glycerides  
 PEG-150  
 PEG/PPG-17/6 copolymer  
 Pentaerythrityl dioleate  
 Pentaerythrityl  
 isostearate/caprate/caprylate/adipate  
 Pentaerythrityl stearate  
 Pentaerythrityl stearate/caprate/caprylate/adipate  
 Pentaerythrityl tetracaprylate/tetracaprate  
 Pentaerythrityl tetraisononanoate, P.  
 tetraisostearate  
 Pentaerythrityl tetralaurate, P. tetraoctanoate  
 Pentaerythrityl tetraoleate, P. tetrapelargonate  
 Pentaerythrityl tetrastearate  
 Perfluorodecalin  
 Perfluoropolymethylisopropyl ether  
 Petrolatum  
 Phenethyl dimethicone  
 Phenyl dimethicone, P. methicone, P.  
 trimethicone  
 Phytantriol  
 Pistachio (*Pistacia vera*) nut oil  
 Placental enzymes  
 Pollen extract  
 Poloxamer 105 benzoate  
 Poloxamer 182 dibenzoate  
 Polybutene  
 Polydecene  
 Polydimethicone copolyol  
 Polyethylene glycol

	Polyglyceryl-2 diisostearate, P. tetrakisostearate	PPG-30
	Polyglyceryl-2 triisostearate	PPG-30 cetyl ether
	Polyglyceryl-3 diisostearate, P. oleate	PPG-40 butyl ether
	Polyglyceryl-3 stearate	PPG-50 cetyl ether, P. oleyl ether
5	Polyglyceryl-6 dioleate	PPG-51/SMDI Copolymer
	Polyglyceryl-10 decaoleate, P. decastearate	PPG-53 butyl ether
	Polyglyceryl-10 tetraoleate	Propylene glycol ceteth-3 acetate
	Polyisobutene	Propylene glycol dicaprylate
	Polyisobutene/isohexapentacontahectane	Propylene glycol dicaprylate/dicaprate
10	Polyisobutene/isooctabexacontane	Propylene glycol diisostearate, P.g. dioctanoate
	Polyisobutene/isopentacontaoctane	Propylene glycol dipelargonate
	Polyisoprene	Propylene glycol isoceteth-3-acetate
	Polyoxyethylene polyoxypropylene glycol	Propylene glycol isostearate, P.g. laurate
	Polyquaternium-2	Propylene glycol myristate
15	Polysiloxane polyalkylene copolymer	Propylene glycol myristyl ether acetate
	Polysorbate 40	Propylene glycol stearate, SE
	Potassium dimethicone copolyol phosphate	Pumpkin (Cucurbita pepo) seed oil
	PPG-2-buteth-3	Quinoa (Chenopodium quinoa) oil
	PPG-2 lanolin alcohol ether	Rapeseed (Brassica campestris) oil
20	PPG-2 myristyl ether propionate	Rice (Oryza sativa bran oil, bran wax
	PPG-3 hydrogenated castor oil	Rice fatty acid
	PPG-3 myristyl ether	Safflower (Carthamus tinctorius) oil
	PPG-5-buteth-7	Salmon (Salmo) egg extract
	PPG-5-laureth-5	Sesame (Sesamum indicum) oil
25	PPG-5 butyl ether	Shark liver oil
	PPG-5 lanolin wax	Shea butter (Butyrospermum parkii)
	PPG-5 pentaerythrityl ether	Shea butter (Butyrospermum parkii) extract
	PPG-7-buteth-10	Shea butter, ethoxylate
30	PPG-8/SMDI copolymer	Shorea stenoptera butter
	PPG-9	Silybum marianum ethyl ester
	PPG-9-buteth-12	Sitostearyl acetate
	PPG-9 butyl ether	Skin lipids
	PPG-10 butanediol, P. cetyl ether	Slippery elm extract
35	PPG-10 methyl glucose ether	Sodium C8-16 isoalkylsuccinyl lactoglobulin
	PPG-10 oleyl ether	sulfonate
	PPG-11 stearyl ether	Sodium carboxymethyl beta-glucan
	PPG-12-buteth-16	Sodium ceteth-13-carboxylate
	PPG-12-PEG-50 lanolin	Sodium dimethicone copolyol acetyl
40	PPG-12-PEG-65 lanolin oil	methyldaurate
	PPG-12/SMDI Copolymer	Sodium glyceryl oleate phosphate
	PPG-14 butyl ether	Sodium hyaluronate, S. polymethacrylate
	PPG-15 butyl ether, P. stearyl ether	Sorbeth-20
	PPG-15 stearyl ether benzoate	Sorbitan isostearate, S. palmitate
45	PPG-16 butyl ether	Sorbitan sesquioleate, S. sesquisteate
	PPG-18 butyl ether	Sorbitan trioleate
	PPG-20	Soybean (Glycine soja) oil
	PPG-20-buteth-30	Spermaceti
	PPG-20 cetyl ether	Sphingolipids
50	PPG-24-glycereth-24	Squalene
	PPG-26	Stearamidopropyl cetearyl dimonium tosylate
	PPG-27 glyceryl ether	Steareth-4 stearate
	PPG-28-buteth-35	Stearic acid, S. hydrazide
		Stearoxy dimethicone

	Stearoxymethicone/dimethicone copolymer	2-Aminobutanol
	Stearyl behenate, S. benzoate	Ammonium acrylates/acrylonitrogens copolymer
	Stearyl dimethicone, S. erucate	Arachidyl alcohol
	Stearyl heptanoate, S. propionate	Beeswax
5	Stearyl stearate	Behenamidopropyl dihydroxypropyl dimonium chloride
	Stearyl stearoyl stearate	Beheneth-5, -10, -20, -30
	Sucrose cocoate	Behenic acid
	Sunflower ( <i>Helianthus annuus</i> ) seed oil	Behenyl betain
10	Sweet almond ( <i>Prunus amygdalus dulcis</i> ) oil	Borageamidopropyl phosphatidyl PG-dimonium chloride
	Sweet cherry ( <i>Prunus avium</i> ) pit oil	Butyloctanol
	Synthetic jojoba oil	C12-20 acid PEG-8 ester
	Synthetic wax	C18-36 acid
	Tallow	Calcium dodecylbenzene sulfonate
	Tetradecyleicosyl stearate	Calcium protein complex
15	Tocopheryl acetate	Calcium stearate
	Tricaprin	Calcium stearoyl lactylate
	Tricaprylin	Capramide DEA
	Tricaprylyl citrate	Caprylic/capric acid
20	Tricholoma matsutake extract	Caprylic/capric glycerides
	Tridecyl behenate, T. cocoate	Castor oil, ethoxylate
	Tridecyl erucate, T. neopentanoate	Cetalkonium chloride
	Tridecyl octanoate, T. stearate	Ceteareth-2 -4 -5 -6
	Tridecyl stearoyl stearate	Ceteareth-2 phosphate
25	Tridecyl trimellitate	Ceteareth-5 phosphate
	Trihexyldecyl citrate	Ceteareth-8 -10 -11 -12
	Triisocetyl citrate	Ceteareth-10 phosphate
	Triisostearin	Ceteareth-15 -17 -20 -25
	Triisostearyl citrate	Ceteareth-27 -29 -30 -34
	Triisostearyl trilinoleate	Cetearyl alcohol
30	Trilaurin	Cetearyl glucoside
	Trilinolein	Ceteth-2 -4 -6 -10 -12 -13
	Trimethylolpropane tricaprylate/tricaprate	Ceteth-16 -20 -25 -30 -33
	Trimethylolpropane tricocoate	Cetethyldimonium bromide
35	Trimethylolpropane trilaurate	Cetrimonium chloride
	Trimyristin	Cetyl dimethicone copolyol
	Trioctanoin	Cetyl phosphate
	Trioctyldodecyl citrate	Cholesterol
	Triolein	Choleth-10 -15 -24
	Tripalmitin	Cocamide DEA, C. MEA
40	Tripropylene glycol citrate	Cocamidopropyl dimethylamine
	Tristearin	Cocamidopropyl PG-dimonium chloride
	Triundecanoin	phosphate
	Vegetable oil	Cocamine
45	Walnut ( <i>Juglans regia</i> ) oil	Coceth-7 carboxylic acid
	Wheat ( <i>Triticum vulgare</i> ) germ oil	Coconut acid
	<b>Emulsifier</b>	Copper protein complex
	Acetylated hydrogenated lard glyceride	Cottonseed glyceride
50	Acetylate hydrogenated vegetable glyceride	C12-13 pareth-3 -4 -9 -23
	Acetylated monoglycerides	C16-18 pareth-3 -5.5 -13 -19
	Acrylates/C10-C30 alkyl acrylate crosspolymer	Cyclodextrin
	Acrylates/vinyl isodecanoate crosspolymer	Decaglycerol monodioleate
	Acrylic acid/acrylonitrogens copolymer	

	DEA-cetareth-2-phosphate	Glyceryl ricinoleate SE
	DEA-cetyl phosphate	Glyceryl stearate, G. stearate citrate
	DEA-cyclocarboxypropylolate	Glyceryl stearate lactate
	DEA-oleth-3-phosphate	Glyceryl stearate SE
5	DEA-oleth-5-phosphate	Glyceryl undecylenate
	DEA oleth-10 phosphate	Glycol distearate, G. oleate
	DEA-oleth-20-phosphate	Glycol palmitate, G. stearate
	Dicetareth-10 phosphoric acid	Glycol stearate SE
	Diethanolamine	Glycolamide stearate
10	Diethylaminoethyl stearate	Glycosphingolipids
	Diglyceryl stearate malate	Hydrogenated coco-glycerides
	Dihydrocholeth-15 -20 -30	Hydrogenated cottonseed glyceride
	Dihydrogenated tallow phthalic acid amide	Hydrogenated lanolin
	Dilauryl acetyl dimonium chloride	Hydrogenated lecithin
15	Dilinoleamidopropyl dimethylamine dimethicone copolyol phosphate	Hydrogenated palm oil
	Dilinoleic acid	Hydrogenated soy glyceride
	Dimethicone copolyol almondate	Hydrogenated tallow glycerides
	Dimethicone copolyol isostearate	Hydrogenated tallow glycerides citrate
20	Dimethicone copolyol laurate	Hydroxycetyl phosphate
	Dimethicone copolyol methyl ether	Hydroxylated lanolin
	Dimethicone copolyol olivate	Hydroxylated lecithin
	Dimethicone copolyol phthalate	Hydroxyoctacosanyl hydroxystearate
	Dipalmitoyl ethyl hydroxyethylmonium	Hydroxypropyl-bis-
25	methosulfate	isostearamidopropyldimonium chloride
	Dipropylene glycol	Isocetareth-8 stearate
	Disodium hydrogenated cottonseed glyceride	Isoceteth-10 stearate
	sulfosuccinate	Isoceteth-20
	Disodium ricinoleamido MEA-sulfosuccinate	Isocetyl alcohol
30	Disodium stearyl sulfosuccinate	Isolaureth-6
	Disodium sulfosuccinamide	Isostearamidopropyl dimethylamine gluconate
	Distearyl phthalic acid amide	Isostearamidopropyl dimethylamine glycolate
	N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride	Isostearamidopropyl laurylaceto dimonium chloride
35	Dodecylphenol-ethylene oxide condensate	Isosteareth-2 -3 -10 -12 -20 -22 -50
	Egg (Ovum) yolk extract	Isostearth-2-octanoate
	Emulsifying wax NF	Isostearth-10 stearate
	Ethoxylated fatty alcohol	Isostearic acid
	N-Ethylether-bis-1,4-(N-isostearylamidopropyl- N,N-dimethyl ammonium chlo	isostearyl diglyceryl succinate
40	ethyl hexanediol	Isostearylamidopropyl dihydroxypropyl dimonium chloride
	Euglena gracilis polysaccharide	Karaya (Sterculia urens) gum
	Glycereth-26 phosphate	Laneth-5 -10 -15 -16 -20 -40
	Glyceryl caprylate, G. caprylate/caprate	Laneth-10 acetate
45	Glyceryl citrate/lactate/linoleate/oleate	Lanolin
	Glyceryl cocoate, G. dilaurate	Lanolin alcohol
	Glyceryl dilaurate, G. dioleate	Lanolin, ultra anhydrous
	Glyceryl distearate, G. hydroxystearate	Lanolin wax
	Glyceryl isostearate, G. lanolate	Lauramide DEA, L. MEA
50	Glyceryl laurate, G. linoleate	Lauramidopropyl dimethylamine
	Glyceryl mono-di-tri-caprylate	Lauramidopropyl PG-dimonium chloride
	Glyceryl myristate, G. oleate	Laureth-1 -2 -3 -4 -5
	Glyceryl palmitate, G. ricinoleate	Laureth-2-octanoate
		Laureth-3 phosphate

	Laureth-4 carboxylic acid	PEG-3 cocamide
	Laureth-5 carboxylic acid	PEG-3 C12-C18 alcohols
	Laureth-6 -7 -9 -11 -12	PEG-3 glyceryl isostearate
	Laureth-11 carboxylic acid	PEG-3 glyceryl triisostearate
5	Laureth-16 -20 -23 -25 -30	PEG-3 glyceryl tristearate
	Lauryl PCA	PEG-3 lanolate, P. sorbitan oleate
	Laurylmethicone copolyol	PEG-3 stearate
	Lecithin	PEG-4 dioleate, P. diisostearate
10	Linoleamidopropyl PG-dimonium chloride phosphate	PEG-4 dilaurate, P. distearate
	Lithium stearate	PEG-4 glyceryl distearate
	Magnesium sulfate hepta-hydrate	PEG-4 laurate, P. oleate
	Maleated soybean oil	PEG-4 stearate
	Methoxy PEG-17/dodecyl glycol copolymer	PEG-4 stearyl stearate
15	Methyl gluceth-20 distearate	PEG-4 tallate
	methyl glucose dioleate, M.g. sesquiisostearate	PEG-5 castor oil, P. cocamine
	Methyl glucose sesquisteate	PEG-5 C12-C18 alcohols
	MEA-laureth sulfate	PEG-5 glyceryl isostearate
	Myreth-3 -4 -7	PEG-5 glyceryl sesquioleate
20	Myreth-3 myristate	PEG-5 glyceryl stearate
	Myristamidopropyl dimethylamine	PEG-5 glyceryl triisostearate
	Nonoxynol-1 -2 -4 -5 -6 -7	PEG-5 lanolate, P. oleamine
	Nonoxynol-8 -9 -10 -11 -12 -13	PEG-5 soy sterol, P. soyamine
	Nonoxynol-14 -15 -18 -20 -30 -40 -50	PEG-5 stearamine, P. stearate
25	Nonyl nonoxynol-5 -10	PEG-5 tallow amine
	Oat (Avena sativa) flour	PEG-6 capric/caprylic glycerides
	Octoxynol-1 -3 -5 -8 -10	PEG-6 cocamide
	Octoxynol 16, 30, 40	PEG-6 C12-14 ether
	2-Octyl dodecyl alcohol	PEG-6 dilaurate, P. dioleate
30	Octyldodecanol	PEG-6 distearate, P. isostearate
	Octyldodeceth-20 -25	PEG-6 lauramide, P. laurate
	Oleamide DEA	PEG-6 oleate, P. palmitate
	Oleamidopropyl dimethylamine	PEG-6 sorbitan beeswax
	Oleamine oxide	PEG-6 sorbitan laurate
35	Oleic acid	PEG-6 sorbitan oleate
	Oleth-2 -3 -4 -5 -6 -7 -8 -9	PEG-6 sorbitan stearate
	Oleth-10 -12 -15 -20 -23	PEG-6 stearate
	Oleth-25 -30 -40 -50	PEG-6-32
	Oleth 13	PEG-6-32 stearate
40	Oleth-2 phosphate	PEG-7 glyceryl cocoate
	Oleth-3 phosphate	PEG-7 hydrogenated castor oil
	Oleth-5 phosphate	PEG-7 oleate
	Oleth-10 phosphate	PEG-7.5 tallowamine
	Oleth-20 phosphate	PEG-8
45	Palm acid	PEG-8 beeswax, P. castor oil
	Palmitamidopropyl dimethylamine	PEG-8 C12-14 ether
	Palmitic acid	PEG-8 dilaurate, P. dioleate
	PEG-2 cocamine, P. distearate	PEG-8 distearate
	PEG-2 hydrogenated tallow amine	PEG-8 glyceryl laurate
50	PEG-2 laurate, P. laurate SE	PEG-8 laurate, P. oleate
	PEG-2 oleamine, P. oleate	PEG-8, P. tallate
	PEG-2 soyamine, P. stearamine	PEG-9 castor oil
	PEG-2 stearate, P. stearate SE	PEG-9 diisostearate
		PEG-9 dioleate, P. distearate

- |    |   |  |
|----|---|--|
|    | PEG-9 laurate, P. oleate                      | PEG-23 oleate, P. stearate                     |
|    | PEG-9 stearate                                | PEG-24 hydrogenated lanolin                    |
|    | PEG-10 castor oil, P. cocamine                | PEG-25 castor oil                              |
|    | PEG-10 coconut oil esters                     | PEG-25 phytosterol                             |
| 5  | PEG-10 C12-18 alcohols                        | PEG-25 propylene glycol stearate               |
|    | PEG-10 dioleate                               | PEG-25 soy stearol, P. stearate                |
|    | PEG-10 glyceryl isostearate                   | PEG-29 castor oil                              |
|    | PEG-10 hydrogenated castor oil                | PEG-30 castor oil                              |
|    | PEG-10 hydrogenated castor oil triisostearate | PEG-30 dipolyhydroxystearate                   |
| 10 | PEG-10 lanolate                               | PEG-30 glyceryl cocoate                        |
|    | PEG-10 polyglyceryl-2 laurate                 | PEG-30 glyceryl isostearate                    |
|    | PEG-10 sorbitan laurate                       | PEG-30 glyceryl laurate                        |
|    | PEG-10 soy sterol, P. stearamine              | PEG-30 glyceryl oleate                         |
|    | PEG-10 stearate                               | PEG-30 glyceryl stearate                       |
| 15 | PEG-11 babassu glycerides                     | PEG-30 hydrogenated castor oil                 |
|    | PEG-11 castor oil                             | PEG-30 lanolin                                 |
|    | PEG-12 dilaurate, P. dioleate                 | PEG-30 sorbitan tetraoleate                    |
|    | PEG-12 distearate                             | PEG-32 dilaurate, P. dioleate                  |
|    | PEG-12 glyceryl dioleate                      | PEG-32 distearate, P. laurate                  |
| 20 | PEG-12 laurate, P. oleate                     | PEG-32 oleate, P. stearate                     |
|    | PEG-12 stearate, P. tallate                   | PEG-33 castor oil                              |
|    | PEG-14 avocado glycerides                     | PEG-35 castor oil, P. stearate                 |
|    | PEG-15 castor oil                             | PEG-40 castor oil                              |
|    | PEG-15 cocamine                               | PEG-40 glyceryl isostearate                    |
| 25 | PEG-15 glyceryl isostearate                   | PEG-40 glyceryl laurate                        |
|    | PEG-15 glyceryl laurate                       | PEG-40 glyceryl triisostearate                 |
|    | PEG-15 glyceryl ricinoleate                   | PEG-40 hydrogenated castor oil                 |
|    | PEG-15 oleamine, P. oleate                    | PEG-40 hydrogenated castor oil PCA isostearate |
|    | PEG-15, P. stearamine                         | PEG-40 sorbitan diisostearate                  |
| 30 | PEG-15 tallow amine                           | PEG-40 sorbitan lanolate                       |
|    | PEG-15 tallow polyamine                       | PEG-40 sorbitan tetraoleate                    |
|    | PEG-16  | PEG-40 stearate                                |
|    | PEG-16 hydrogenated castor oil                | PEG-40/dodecyl glycol copolymer                |
|    | PEG-16 soy sterol                             | PEG-42 babassu glycerides                      |
| 35 | PEG-18 stearate                               | PEG-44 sorbitan laurate                        |
|    | PEG-20 almond glycerides                      | PEG-45 palm kernel glycerides                  |
|    | PEG-20 castor oil, P. dilaurate               | PEG-45 safflower glycerides                    |
|    | PEG-20 dioleate, P. distearate                | PEG-50 lanolin, P. stearamine                  |
|    | PEG-20 glyceryl laurate                       | PEG-50 stearate                                |
| 40 | PEG-20 glyceryl oleate                        | PEG-60 almond glycerides                       |
|    | PEG-20 glyceryl stearate                      | PEG-60 castor oil                              |
|    | PEG-20 glyceryl triisostearate                | PEG-60 corn glycerides                         |
|    | PEG-20 glyceryl tristearate                   | PEG-60 glyceryl triisostearate                 |
|    | PEG-20 hydrogenated castor oil                | PEG-60 hydrogenated castor oil                 |
| 45 | PEG-20 hydrogenated lanolin                   | PEG-60 hydrogenated castor oil isostearate     |
|    | PEG-20 lanolin, P. laurate                    | PEG-60 hydrogenated castor oil triisostearate  |
|    | PEG-20 oleate                                 | PEG-60 shea butter glycerides                  |
|    | PEG-20 methyl glucose sesquisteate            | PEG-60 sorbitan tetraoleate                    |
|    | PEG-20 sorbitan beeswax                       | PEG-70 mango glycerides                        |
| 50 | PEG-20 sorbitan isostearate                   | PEG-75   |
|    | PEG-20 sorbitan triisostearate                | PEG-75 castor oil, P. dilaurate                |
|    | PEG-20 sorbitan trioleate                     | PEG-75 dioleate, P. distearate                 |
|    | PEG-20 stearate, P. tallow amine              | PEG-75 lanolin, P. laurate                     |

- PEG-75 oleate  
 PEG-75 shea butter glycerides  
 PEG-75 shorea butter glycerides  
 PEG-75 stearate  
 5 PEG-80 sorbitan laurate  
 PEG-90 stearate  
 PEG-100 castor oil  
 PEG-100 hydrogenated castor oil  
 PEG-100 lanolin, P. stearate  
 10 PEG-120 distearate  
 PEG-150 dilaurate, P. dioleate  
 PEG-150 distearate, P. lanolin  
 PEG-150 laurate, P. oleate  
 PEG-150 stearate  
 15 PEG-200 castor oil  
 PEG-200 glyceryl stearate  
 PEG-200 hydrogenated castor oil  
 PEG-200 laurate, P. oleate  
 PEG-400 laurate  
 20 Phosphate esters  
 Phosphated amine oxides  
 Phospholipids  
 Poloxamer 101, 105, 122, 123, 124  
 Poloxamer 181, 182, 184, 185, 235, 237  
 25 Poloxamer 238, 334, 338, 407  
 Polyglyceryl-2 oleate  
 Polyglyceryl-2 polyhydroxystearate  
 Polyglyceryl-2 sesquiisostearate  
 Polyglyceryl-2 stearate  
 30 Polyglyceryl-2-PEG-4-distearate  
 Polyglyceryl-2-PEG-4-stearate  
 Polyglyceryl-3 diisostearate, P. dioleate  
 Polyglyceryl-3 distearate  
 Polyglyceryl-3 methylglucose distearate  
 35 Polyglyceryl-3 oleate, P. polyricinoleate  
 Polyglyceryl-3 stearate  
 Polyglyceryl-4 oleate, P. stearate  
 Polyglyceryl-6 dioleate, P. distearate  
 Polyglyceryl-6 laurate, P. myristate  
 40 Polyglyceryl-6 oleate, P. polyricinoleate  
 Polyglyceryl-6 stearate  
 Polyglyceryl-8 oleate  
 Polyglyceryl-10 decaoleate  
 Polyglyceryl-10 diisostearate  
 45 Polyglyceryl-10 dioleate, P. dipalmitate  
 Polyglyceryl-10 distearate, P. isostearate  
 Polyglyceryl-10 laurate, P. linoleate  
 Polyglyceryl-10 mixed fatty acids  
 Polyglyceryl-10 myristate  
 50 Polyglyceryl-10 oleate  
 Polyglyceryl-10 pentastearate  
 Polyglyceryl-10 stearate  
 Polyglyceryl-10 tetraoleate  
 Polyglyceryl-10 trioleate  
 Polyoxyethylene polyoxypropylene glycol  
 Polyquaternium-5, -31  
 Polysorbate 20, 21, 40, 60, 61  
 Polysorbate 65, 80, 81, 85  
 Potassium alginate, P. cetyl phosphate  
 Potassium laurate, P. myristate  
 Potassium tallowate  
 PPG-1-PEG-9 lauryl glycol ether  
 PPG-2-cetareth-9  
 PPG-3 isosteareth-9  
 PPG-3 PEG-6 oleylether  
 PPG-5-buteth-7  
 PPG-5-ceteth-20  
 PPG-5-ceteth-10 phosphate  
 PPG-8 oleate  
 PPG-10 cetyl ether phosphate  
 PPG-12-PEG-50 lanolin  
 PPG-15 stearyl ether  
 PPG-24-buteth-27  
 PPG-25 laureth-25  
 PPG-26-buteth-26  
 PPG-26 oleate  
 PPG-36 oleate  
 Propylene glycol alginate, P.g. dioleate  
 Propylene glycol hydroxystearate  
 Propylene glycol laurate, P.g. ricinoleate  
 Propylene glycol ricinoleate SE  
 Propylene glycol stearate  
 Propylene glycol stearate, SE  
 Quaternium-33  
 Rapeseedamidopropyl ethyldimonium ethosulfate  
 Rice (*Oryza sativa*) bran wax  
 Ricinoleamide DEA  
 Ricinoleic acid  
 Saponins  
 Selenium protein complex  
 Silicone quaternium-5, -6  
 Sodium acrylates vinyl isodecanoate  
 crosspolymer  
 Sodium caproyl lactylate  
 Sodium carbomer  
 Sodium cetyl sulfate  
 Sodium C12-15 pareth-15 sulfonate  
 Sodium isostearoyl lactylate  
 Sodium laureth-17 carboxylate  
 Sodium lauroyl lactylate  
 Sodium lauryl sulfate  
 Sodium nonoxynol-6 phosphate  
 Sodium oeryl sulfate  
 Sodium oleate  
 Sodium oleyl sulfate  
 Sodium phosphate



- 5 Sodium stearoyl lactylate  
Sorbeth-20  
Sorbitán isostearate, S. laurate  
Sorbitan oleate, S. palmitate  
Sorbitan sesquiosostearate  
Sorbitan sesquioleate, S. sesquistearate  
Sorbitan stearate, S. triisostearate  
Sorbitan trioleate, S. tristearate  
Soyamidopropyl dimethylamine  
10 Soyamine  
Stearamide DEA  
Stearamide DIBA-stearate  
Stearamidoethyl diethylamine  
Stearamidopropyl dimethylamine, lactate  
15 Stearamidopropyl PG-dimonium chloride phosphate  
Stearamine  
Stearamine oxide  
Steareth-2, -4, -6, -7, -10, -11, -13  
20 Steareth-2 phosphate  
Steareth-15, -20, -21, -30, -100  
Stearic acid  
Sucrose cocoate, S. distearate  
Sucrose stearate  
25 Sythetic beeswax  
Tallow glyceride, acetylated hydrogenated  
Tallowamide DEA  
Tallowamidopropyl dimethylamine  
Talloweth-6  
30 Tetrasodium dicarboxyethyl stearyl sulfosuccinamide  
TEA-acrylates/acrylonitrogens copolymer  
Tissue extract  
Triceteareth-4 phosphate  
35 Trideceth-3, -5, -6, -7, -8  
Trideceth-9, -10, -12, -15  
Tridecyl ethoxylate  
Triethanolamine  
Trilaureth-4 phosphate  
40 Triolein  
Trisodium HEDTA  
Tristearin

**Enzyme**

- 45 Fermented vegetable  
Ganoderma lucidum oil  
Lipase  
Papain  
Soy (Glycine soja) protein  
50 Superoxide dismutase

**Essential oil**

Aesculus chinensis extract

Artemisia apiacea extract  
Brassica rapa-depressa extract  
Caraway (Carum carvi) oil  
Cardamon (Elettaria cardamomum) oil  
Clove (Eugenia caryophyllus) oil  
Eclipta alba extract  
Eucalyptus globulus oil  
Eupatorium fortunei extract  
Euterpe precatoria extract  
Hierochloa odorata extract  
Kadsura heteliloca extract  
Ligustrum lucidum extract  
Lysimachia foenum-graecum extract  
Melaleuca bracteata extract  
Melaleuca hypericifolia extract  
Melaleuca symphyocarp extract  
Melaleuca uncinata extract  
Melaleuca wilsonii extract  
Nasturtium sinensis extract  
Nelumbium speciosum extract  
Paulownia imperialis extract  
Rosemary (Rosmarinus officinalis) oil  
Selinum spp. extract  
Trichomonas japonica extract  
Withania somniferum extract  
Yuzu oil  
Ziziphus jujuba extract

**Exfoliant**

Apricot (Prunus armeniaca) kernel powder  
Glycolic acid  
Jojoba (Buxus chinensis) seed powder  
Lactic acid  
Papain  
PEG 11-Avocado Glycerides  
Willow (Salix alba) bark extract

**Fiber**

Corn (Zea mays) cob powder  
Nylon-66  
Oat (Avena sativa) bran, meal  
Rayon

**Film former**

Acetylated lanolin  
Acrylates/hydroxyesters acrylates copolymer  
Acrylate/octylarylamide copolymer  
Acrylate copolymer alkylated  
polyvinylpyrrolidone  
Ammonium acrylates/acrylonitrogens copolymer  
Betaglucon  
Bladderwrack (Fucus vesiculosus) extract  
Carboxymethylchitosan  
N,O-Carboxymethylchitosonium

- Chitosan lactate  
Collagen  
Collagen phthalate  
Colloidal oatmeal  
5 Desamido collagen  
Diisostearoyl trimethylolpropane siloxy silicate  
DMHF  
Ethyl ester of hydrolyzed silk  
Ethylcellulose  
10 Gellan gum  
Glycerin/diethylene glycol/adipate crosspolymer  
High beta-glucan barley flour  
Hydrolyzed collagen  
Hydrolyzed keratin  
15 Hydrolyzed oat protein  
Hydrolyzed pea protein  
Hydrolyzed reticulin  
Hydrolyzed RNA  
Hydrolyzed silk  
20 Hydrolyzed soy protein  
Hydrolyzed wheat protein  
Hydrolyzed wheat protein/dimethicone copolyol  
phosphate copolymer  
Hydrolyzed wheat protein/PVP copolymer  
25 Hydroxypropylcellulose  
Hydroxypropyltrimonium gelatin  
Jojoba (*Buxus chinensis*) oil  
Lactoglobulin  
Myristoyl hydrolyzed collagen  
30 Nitrocellulose  
Oat (*Avena sativa*) extract, protein  
Polyethylene, ionomer  
Polyquaternium-6, -7, -11, -22, -39  
Polyvinyl acetate, P. alcohol  
35 PVM/MA decadiene crosspolymer  
  
PVP/Dimethiconylacrylate/polycarbamyl/polyglycol ester  
40 PVP/dimethylaminoethylmethacrylate copolymer  
PVP/dimethylaminoethylmethacrylate/  
polycarbamyl/polyglycol ester  
PVP/eicosene copolymer  
PVP/hexadecene copolymer  
45 PVP/hydrolyzed wheat protein copolymer  
Rice peptide  
Sericin  
Shea butter (*Butyrospermum parkii*)  
Shellac  
50 Sodium C12-15 pareth-7 sulfonate  
Sodium hyaluronate  
Souble collagen  
Souble keratin

Souble wheat protein  
TEA-acrylates/acrylonitrogens copolymer  
Tosylamide/epoxy resin  
Tricontanyl PVP  
Triethonium hydrolyzed collagen ethosulfate  
Wheat peptide

Fixative

Acrylates copolymer  
Adipic acid/dimethylaminohydroxypropyl  
diethylene triamine copolymer  
AMP-acrylates copolymer  
Hydrolyzed zein  
Methacryl ethyl betaine/acrylates copolymer  
Methyl rosinat  
Polyquaternium-4, -10, -29  
PPG-20 methyl glucose ether  
Sodium polystyrene sulfonate

Flavor (aroma)

Benzaldehyde  
Caraway (*Carum carvi*) oil  
Cardamon (*Elettaria cardamomum*) oil  
Cinnamon (*Cinnamomum casia*) oil  
Clove (*Eugenia caryophyllus*) oil  
Ethyl vanillin  
Eucalyptus globulus oil  
Flavor (aroma)  
Glutamic acid  
Glycyrrhetic acid  
Glycyrrhizic acid  
Glycyrrhizin, ammoniated  
Methyl salicylate  
Orange (*Citrus aurantium dulcis*) oil  
Peppermint (*Mentha piperita*) oil  
Rosemary (*Rosmarinus officinalis*) oil  
Sodium glycyrrhizinate  
Thymol Vanillin

Foam booster

Alkyldimethylamine oxide  
Babassuamidopropyl betaine  
Babassuamidopropylamine oxide  
Caprylyl pyrrolione  
Carrageenan (*Chondrus crispus*)  
Cocamide DEA, C. MIPA  
Cocamidopropyl betaine  
Cocamidopropyl dimethylamine lactate  
Cocamidopropyl hydroxysultaine  
Coco-betaine  
Coco/oleamidopropyl betaine  
Cocoyl amido hydroxy sulfo betaine  
Cocoyl monoethanolamide ethoxylate

5 DEA-hydrolyzed lecithin  
 Dimethyl lauramine  
 Disodium cocamido MEA-sulfosuccinate  
 Disodium cocoamphodiacetate  
 Disodium lauramido MEA-sulfosuccinate  
 Disodium laureth sulfosuccinate  
 Lauramide MIPA  
 Lauramidopropyl betaine  
 Lauryl betaine  
 10 Myristamidopropyl dimethylamine dimethicone  
 copolyol phosphate  
 Myristamine oxide  
 Octyldodecyl benzoate  
 Oleamide DEA, O. MIPA  
 15 Oleyl betain  
 Palm kernelamide DEA  
 PEG-3 lauramine oxide  
 PPG-15 stearyl ether benzoate  
 PEG-7000  
 20 Sodium cocoamphoacetate  
 Sodium cocoyl isethionate  
 Sodium laureth sulfate  
 Sodium lauroyl wheat amino acids  
 Sodium octoxynol-2 ethane sulfonate  
 25 Soyamidopropyl betaine  
 Tallowamide MEA  
  
Foam stabilizer  
 Babassuamidopropylamine oxide  
 30 Behenamine oxide  
 Caprylyl pyrrolidone  
 Cetamine oxide  
 Cocamide DEA, C. MEA, C. MIPA  
 Cocamidopropyl betaine  
 35 Cocamidopropyl hydroxysultaine  
 Cocamidopropyl lauryl ether  
 Cocamidopropylamine oxide  
 Cocamine oxide  
 Dihydroxyethyl C12-15 alkoxypropylamine oxide  
 40 Dihydroxyethyl cocamine oxide  
 Dihydroxyethyl tallowamine oxide  
 Erucamidopropyl hydroxysultaine  
 Hydroxypropyl methylcellulose  
 Isostearamide DEA  
 45 Lauramide DEA, L. MEA  
 Lauramido propylamine oxide  
 Lauramine oxide  
 Laureth-10  
 Lauric-linoleic DEA  
 50 Lauroyl-linoleoyl diethanolamide  
 Lauroyl-myristoyl diethanolamide  
 Lauryl pyrrolidone  
 Linoleamide MEA

Myristamide DEA, M. MEA  
 Oleamide MEA  
 Palmitamide MEA  
 PEG-3 lauramide  
 PEG-4 oleamide  
 Ricinoleamide MEA  
 Sesamide DEA  
 Wheat germamide DEA

#### Foamer

Ammonium laureth sulfate  
 Ammonium laureth-5 sulfate  
 Ammonium laureth-12 sulfate  
 Ammonium lauryl sulfate, A.I. sulfosuccinate  
 Ammonium myreth sulfate  
 Ammonium nonoxynol 4 sulfate  
 Capryl caprylyl glucoside  
 Cetyl betaine  
 Cocamide  
 Cocamidopropyl dimethylamine  
 Cocamidopropyl dimethylamine lactate  
 DEA-laureth sulfate  
 DEA lauryl sulfate  
 Decyl glucoside  
 Disodium caproamphodiacetate  
 Disodium caproamphodipropionate  
 Disodium capryloamphodiacetate  
 Disodium cocoamphodipropionate  
 Disodium lauroamphodiacetate  
 Disodium lauroamphodipropionate  
 Disodium lauryl sulfosuccinate  
 Disodium oleamido MEA-sulfosuccinate  
 Disodium oleamido MIPA-sulfosuccinate  
 Disodium PEG-4 cocoamido MIPA-  
 sulfosuccinate  
 Isostearamidopropylamine oxide  
 Lauryl glucoside  
 Methyl gluceth-20  
 MEA-laureth sulfate  
 Mixed isopropanolamines myristate  
 MIPA-lauryl sulfate  
 PEG-80 sorbitan laurate  
 PEG lauryl ether sulfate  
 Potassium cocoate, P. lauryl sulfate  
 Quillaja saponaria extract  
 Sodium caproamphoacetate  
 Sodium capryloamphoacetate  
 Sodium capryloamphohydroxypropylsulfonate  
 Sodium cocoamphoacetate  
 Sodium cocoamphopropionate  
 Sodium C12-15 pareth-25 sulfate  
 Sodium C12-15 pareth-3 sulfonate  
 Sodium C12-15 pareth-15 sulfonate

- Sodium C14-16 olefin sulfonate  
Sodium deceth sulfate  
Sodium laureth-2 sulfate  
Sodium laureth-3 sulfate  
5 Sodium laureth-7 sulfate  
Sodium lauriminodipropionate  
Sodium laurylether sulfosuccinate  
Sodium lauryl sulfate, S.I. sulfoacetate  
Sodium lauryl sulfosuccinate  
10 Sodium magnesium laureth sulfate  
Sodium myreth sulfate, S. myristyl sulfate  
Sodium trideceth sulfate  
Sodium tridecyl sulfate  
TEA-dodecylbenzenesulfonate  
15 TEA-laureth sulfate  
TEA-lauroyl collagen amino acids  
TEA-lauroyl keratin amino acids  
TEA-lauryl sulfate  
TEA-palm kernel sarcosinate  
20 Wheat germamidopropyl betain  
Yucca vera extract
- Fragrance**  
Chamaecyparis obtusa oil  
25 Orange (Citrus aurantium dulcis) oil  
Peppermint (Mentha piperita) oil  
Phenethyl alcohol
- Fragrance solvent**  
30 Benzyl benzoate  
Diethyl phthalate  
Triacetin  
Triethyl citrate
- 35 **Fungicide**  
Astrocaryum murumuru extract  
Azadirachta indica extract  
Captan  
Diiodomethyltolylsulfone  
40 Ficus racemosa extract  
Hexetidine  
Ligusticum jeholense extract  
Mauritia flexosa extract  
Melaleuca symphyocarp extract  
45 Melia australasica extract  
Melia azadirachta extract  
Mushroom (Cordyceps sabolifera) extract  
Mushroom (Coriolus versicolor) extract  
Sodium undecylenate  
50 Tea tree (Melaleuca alternifolia) oil  
Thiabendazole  
Undecylenamide MEA  
Zinc undecylenate
- Ziziphus jujuba extract
- Gellant**  
Acrylic acid/acrylonitrogens copolymer  
Agar  
Algin  
Aluminum distearate, A. tristearate  
Ammonium acrylates/acrylonitrogens copolymer  
Behenic acid  
Calcium alginate  
Carbomer  
Carboxymethylchitosan  
N,O-Carboxymethylchitosonium  
Carrageenan (Chondrus crispus)  
Ceresin  
Cetearyl candelillate  
Dibenzylidene sorbitol  
Ethylene/acrylic acid copolymer  
Ethylene/VA copolymer  
Gellan gum  
Hexanediol behenyl beeswax  
Hydrogenated jojoba oil  
Hydrogenated jojoba wax  
Hydroxystearic acid  
Jojoba wax  
Laneth-5, -15  
Montmorillonite  
Myreth-3-octanoate  
Octacosanyl stearate  
Oleth-3 phosphate  
Oleth-10 phosphate  
Poloxamer 105, 123, 124, 185, 235  
Poloxamer 237, 238, 338, 407  
Polyethylene  
Polyethylene, oxidized  
Polyquaternium-31  
Potassium alginate, P. chloride  
Sodium nonoxynol-6 phosphate  
Sodium tallowate  
Synthetic beeswax  
TEA-acrylates/acrylonitrogens copolymer  
Tribehenin
- Glosser**  
C18-36 acid glycol ester  
Diphenyl dimethicone  
Methyl gluceth-10  
Octyldodecyl lactate  
Phenyl methicone, P. trimethicone  
Polyglyceryl-2 dioleate  
Polyisobutene  
Polyisobutene/isohexapentacontahectane  
Polyisobutene/isooctahexacontane

	Polymethacrylamidopropyltrimonium chloride	Dihydroxyethyl tallowamine oleate
	PPG-10 methyl glucose ether	Dimethicone
	PPG-36 oleate	Dimethicone copolyol acetate, D.c. almondate
	Tea ( <i>Camellia sinensis</i> ) oil	Dimethicone copolyol amine
5	Tribehenin	Dimethicone copolyol bishydroxyethylamine
	<b><u>Hair care</u></b>	Dimethicon copolyol isostearate, D.c. laurate
	Gentiana scabra extract	Dimethicone copolyol olivate
	Maidenhair fern extract	Dimethicone hydroxypropyl trimonium chloride
10	Nicotinamide	Dimethyl lauramine dimer dilinoleate
	Nicotinic acid	Dioleylamidoethyl hydroxyethylmonium methosulfate
	Paeonia lactiflorum extract	Dipalmitoylethyl hydroxyethylmonium methosulfate
	Watercress ( <i>Nasturtium officinale</i> ) extract	Diphenyl dimethicone
15	<b><u>Hair conditioner</u></b>	Ditallowdimonium chloride
	Amino bispropyl dimethicone	N-Dodecyl-N,N-dimethyl-N-(dodecyl acetate) ammonium chloride
	Amodimethicone	Entada phaseoloides extract
	AMPD-isostearoyl hydrolyzed collagen	Ethyl ester of hydrolyzed animal protein
	Aqua Ichthammol	Gelatin
20	Babassu ( <i>Orbignya oleifera</i> ) oil	Ginseng hydroxypropyltrimonium chloride butylene glycol
	Babassuamidopropalkonium chloride	Hematin
	Behenamidopropyl dimethylamine	Honey (Mel)
	Behenamidopropyl hydroxyethyl dimonium chloride	Hydrolyzed collagen
25	Behentrimonium chloride	Hydrolyzed hair keratin
	Biotin	Hydrolyzed vegetable protein
	Bishydroxyethyl biscetyl malonamide	Hydrolyzed wheat protein/dimethicone copolyol acetyl copolymer
	Borageamidopropyl phosphatidyl PG-dimonium chloride	Hydrolyzed wheat protein hydroxypropyl polysiloxane
30	Brazil nut ( <i>Bertholettia excelsa</i> ) oil	Hydroxyethyl cetyldimonium phosphate
	Cetearyl trimonium methosulphate	Hydroxypropyl trimonium hydrolyzed collagen
	Cetrimonium bromide, C. chloride	Hydroxypropyl trimonium hydrolyzed wheat protein polysiloxane copolymer
	Cetyl pyridinium chloride	Hyssop ( <i>Hyssopus officinalis</i> ) extract
35	Chia ( <i>Salvia hispanica</i> ) oil	Inga edulis extract
	Chrysanthemum morifolium extract	Isostearamidopropylamine oxide
	Cinchona succirubra extract	Isostearoyl hydrolyzed collagen
	Cocamidopropyl dimethylamine propionate	Keratin amino acids
	Coccinea indica extract	Kiwi ( <i>Actinidia chinensis</i> ) fruit extract
40	Cocodimonium hydroxypropyl hydrolyzed collagen	Kola ( <i>Cola acuminata</i> ) extract
	Cocodimonium hydroxypropyl hydrolyzed keratin	Laminaria japonica extract
	Cocodimonium hydroxypropyl silk amino acids	Laurtrimonium chloride
	Cocodimonium hydroxypropyl hydrolyzed wheat protein	Lauryl hydroxypropyl trimonium polysiloxane copolymer
45	Cocodimonium hydroxypropyloxyethyl cellulose	Lauryldimethylamine isostearate
	Cocotrimonium chloride	Lauryldimonium hydroxypropyl hydrolyzed collagen
	Collagen amino acids	Lauryldimonium hydroxypropyl hydrolyzed wheat protein
	Cyclomethicone	Linoleamidopropyl dimethylamine dimer dilinoleate
50	L-cysteine HCL	
	Dibehenylmonium methosulfate	
	Dicetyldimonium chloride	
	Dicocodimonium chloride	

	Linoleamidopropyldimethylamine	Tallowbenzyldimethylammonium chloride,
	Lysimachia foenum-graecum extract	hydrogenated
	Melaleuca hypericifolia extract	Tallowtrimonium chloride
	Ocimum santum extract	Tea (Camellia sinensis) oil
5	Olealkonium chloride	TEA-cocoyl hydrolyzed soy protein
	Oleyl dimethylamidopropyl ethonium ethosulfate	Thenoyl methionate
	Palmitamidodecanediol	Trimethylsilylamodimethicone
	Panthenyl ethyl ether	Wheat amino acids
	Paulownia imperialis extract	
10	Peach (Prunus perisca) leaf extract	
	PEG-2 cocomonium chloride	
	PEG-120 jojoba acid/alcohol	
	PG-hydroxycellulose lauryldimonium chloride	
	PG-hydroxyethylcellulose cocodimonium	
15	chloride	
	PG-hydroxyethylcellulose lauryldimonium	
	chloride	
	PG-hydroxyethylcellulose stearyldimonium	
	chloride	
20	Phenyl trimethicone	
	Phospholipids	
	Phytantriol	
	Polyoxyethylene polyoxypropylene glycol	
	Polypropylene glycol	
25	Polyquaternium-4, -6, -7, -10	
	Polyquaternium-22, -28, -39	
	PPG-5-ceteth-10 phosphate	
	Propyltrimonium hydrolyzed collagen	
	propyltrimonium hydrolyzed soy protein	
30	Quaternium-18, -75, -81, -82	
	Quaternium-79 hydrolyzed keratin	
	Quaternium-79 hydrolyzed silk	
	Sambucus nigra extract, oil	
	Sesamidopropalkonium chloride	
35	Silicone quaternium-1, -8	
	Sodium cocoamphoacetate	
	Sodium cocoyl hydrolyzed collagen	
	Sodium polystyrene sulfonate	
	N-Soya-(3-amidopropyl)-N,N-dimethyl-N-ethyl	
40	ammonium ethyl sulfate	
	Steapyrium chloride	
	Stearalkonium chloride	
	Stearamidopropyl dimethylamine	
	Steardimonium hydroxypropyl hydrolyzed wheat	
45	protein	
	STeartrimonium chloride	
	Steartrimonium hydroxyethyl hydrolyzed	
	collagen	
	N-Stearyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl	
50	ammonium ethyl sulfate	
	Stenocalyx micalii extract	
	Sulfur	

**Hair set resin polymer**

- Acrylates/acrylamide copolymer  
 Acrylates/PVP copolymer  
 Acrylates/hydroxyesters acrylates copolymer  
 5 Acrylates/octylarylamide copolymer  
 AMP-acrylates copolymer  
 Butylester of PVM-MA copolymer  
 Carboxylated vinylacetate terpolymer  
 Diglycol/CHDM/isophthalates/SIP copolymer  
 10 Eclipta alba extract  
 Ethyl ester of PVM/MA copolymer  
 Hydroxypropyl chitosan  
 Isopropyl ester of PVM/MA copolymer  
 Octylacrylamide/acrylates/butylaminoethyl  
 15 methacrylate copolymer  
 Polymethacrylamidopropyltrimonium chloride  
 Polypropylene glycol oligosuccinate  
 PVP  
 PVP/dimethylaminoethylmethacrylate copolymer  
 20 PVP/Polycarbamyl polyglycol ester  
 PVP/VA copolymer  
 PVP/VA vinyl propionate copolymer  
 Sodium polyacrylate  
 VA/butyl maleate/isobornyl acrylate copolymer  
 25 VA/crotonates/vinyl neodecanoate copolymer  
 VA/crotonates/vinyl propionate copolymer  
 VA/crotonates copolymer  
 Vinyl caprolactam/PVP/  
 dimethylaminoethylmethacrylate copolymer  
 30

**Hair sheen**

Maidenhair fern extract  
 Tetrabutoxypopyl methicone

**Hair waving**

- Ammonium thioglycolate, A. thiolactate  
 Argania spinosa oil  
 L-cysteine HCL  
 Cystine  
 40 Diammonium dithiodiglycolate  
 Dilauryl thiodipropionate  
 Ethanolamine sulfite, E. thioglycolate  
 Ethanolamine thiolactate  
 Glyceryl thioglycolate  
 45 Hydroxymethyl dioxazabicyclooctane  
 Jojoba esters  
 Monoethanolamine thiolactate  
 Shea butter, ethoxylated  
 Sodium thioglycolate  
 50 Thioglycerin  
 Thioglycolic acid  
 Thiolactic acid

**Humectant**

Acetamide MEA  
 Acetyl monoethanolamine  
 6-(N-Acetyl amino)-4-oxyhexyltrimonium  
 chloride  
 Adenosine phosphate  
 Ammonium lactate  
 Atelocollagen  
 Calcium pantothenate  
 Calcium stearoyl lactylate  
 Carboxymethyl chitin  
 Carboxymethyl chitosan succinamide  
 Chitosan PCA  
 Cholesteryl hydroxystearate  
 Collagen amino-polysiloxane hydrolyzate  
 Colloidal oatmeal  
 Copper PCA methylsilanol  
 Dimethicone copolyol laurate  
 Dipotassium glycyrrhizinate  
 Ethyl ester of hydrolyzed silk  
 Fatty quaternary amine chloride complex  
 Glucos glutamate  
 Glycereth-4,5-lactate  
 Glycereth-7, -12, -26  
 Glycerin  
 Honey extract  
 Hydrogenated passion fruit oil  
 Hydrolyzed casein  
 Hydrolyzed fibronectin  
 Hydrolyzed glycosaminoglycans  
 Hydrolyzed oat protein  
 Hydrolyzed silk  
 Hydrolyzed soy protein  
 Hydroxypropyl chitosan  
 Hydroxypropyltrimonium hydrolyzed casein  
 Hydroxypropyltrimonium hydrolyzed silk  
 Hydroxypropyltrimonium hydrolyzed soy protein  
 Hydroxypropyltrimonium hydrolyzed wheat  
 protein  
 Keratin amino acids  
 Lactamide DGA, MEA  
 Lactamidopropyl trimonium chloride  
 Lactic acid  
 Lactose  
 Lauroyl lysine  
 Maltitol  
 Mannitol  
 Methyl gluceth-10, -20  
 Natto gum  
 Oat (Avena sativa) extract, protein  
 Panthenol  
 Panthenyl ethyl ether  
 PCA

- PEG-4  
 Polyamino sugar condensate  
 Potassium lactate  
 Propylene glycol  
 5 Propyltrimonium hydrolyzed collagen  
 propyltrimonium hydrolyzed soy protein  
 Propyltrimonium hydrolyzed wheat protein  
 Quaternium-22  
 Rice (*Oryza sativa*) germ oil  
 10 Sea Salts (*Maris sal*)  
 Shea butter (*Butyrospermum parkii*)  
 Silk powder  
 Sodium behenoyl lactylate  
 Sodium caproyl lactylate  
 15 Sodium cocoyl lactylate  
 Sodium hyaluronate  
 Sodium isostearoyl lactylate  
 Sodium lactate, S. lauroyl lactylate, S. PCA  
 Sodium polyglutamate  
 20 Sodium stearoyl lactylate  
 Sorbitan laurate  
 Sorbitan sesquiisostearate  
 Sorbitol  
 Sphingolipids  
 25 TEA-PCA  
 Urea

**Hydrotrope**

- Ammonium cumenesulfonate  
 30 Ammonium xylenesulfonate  
 Cetamine oxide  
 Cocamidopropylamine oxide  
 Lauramine oxide  
 Potassium toluenesulfonate  
 35 PPG-2-isodeceth-4, -6, -9, -12  
 Sodium cumene sulfonate  
 Sodium laureth-13-carboxylate  
 Sodium toluene sulfonate  
 Sodium xylene sulfonate  
 40 Trideceth-19-carboxylic acid

**Intermediate**

- Caprylic acid  
 Deceth-3  
 45 Diethyl succinate  
 Dimethylaminopropylamine  
 DM hydantoin  
 Dodecylbenzene sulfonic acid  
 Ethylene dichloride  
 50 4-Fluoro 3-nitro aniline  
 Lauramine  
 Methyl benzoate, M. cocoate  
 Methyl isostearate, M. laurate

- Methyl myristate, M. palmitate  
 Oleic acid  
 Ricinoleic acid  
 Tall oil acid  
 Tallow acid

**Lathering agent**

- Ammonium cocoyl sarcosinate  
 Ammonium C12-15 alkyl sulfate  
 Ammonium lauroyl sarcosinate  
 Cocamide MEA ethoxylate  
 Cocamidopropyl dimethylaminohydroxypropyl  
 hydrolyzed collagen  
 Lauroyl sarcosine  
 Myristoyl sarcosine  
 Sodium cocoyl sarcosinate  
 Sodium lauroyl sarcosinate  
 Sodium methyl cocoyl taurate  
 Sodium myristoyl sarcosinate  
 TEA-cocoyl sarcosinate  
 TEA-lauroyl sarcosinate

**Lubricant**

- Aluminum salt octenyl succinate  
 Amodimethicone  
 Boron nitride  
 Calcium aluminum borosilicate  
 Calcium stearate  
 Caprylic/capric triglyceride  
 Coceth-7 carboxylic acid  
 Coconut (*Cocos nucifera*) oil  
 Cyclomethicone  
 Diisodecyl adipate  
 Diisostearyl fumarate  
 Dimethicone copolyol  
 Glycerol isostearate, G. oleate  
 Glycerol polymethacrylate  
 Gold of Pleasure oil  
 Hyaluronic acid  
 Hydrogenated coconut oil  
 Hydrogenated cottonseed oil  
 Hydrogenated palm oil  
 Hydrogenated soybean/cottonseed oil  
 Hydrogenated soybean oil  
 Hydrogenated vegetable oil  
 Hydrolyzed oat flour  
 Hydroxypropyl guar  
 Isodecyl stearate  
 Isopropyl lanolate  
 Isostearyl diglycerol succinate  
 Jojoba esters  
 Lanolin oil  
 Laureth-3 phosphate  
 Magnesium myristate, M. stearate



Mango (*Mangifera indica*) oil  
 Mineral oil (*Paraffinum liquidum*)  
 Mink oil  
 Monostearyl citrate  
 5 Neatsfoot oil  
 Oleostearine  
 Partially hydrogenated soybean oil  
 PEG-2 stearate  
 PEG-4 dilaurate  
 10 PEG-5M  
 PEG-9M  
 PEG-23M  
 PEG-27 lanolin  
 PEG-30 lanolin  
 15 PEG-40 lanolin, P. stearate  
 PEG-45M  
 PEG-90M  
 PEG-160M  
 PEG/PPG-17/6 copolymer  
 20 Pentaerythrityl tetrapelargonate  
 Petrolatum  
 Phenethyl dimethicone  
 Phenyl methicone  
 Polyacrylamidomethylpropane sulfonic acid  
 25 Polybutane  
 Polydimethicone copolyol  
 Polyglycerol ester of mixed vegetable fatty acids  
 Polymethylsilsesquioxane  
 Potassium laurate, P. myristate  
 30 Potassium tallowate  
 PPG-2 myristyl ether propionate  
 PPG-3 myristyl ether  
 PPG-9-buteth-12  
 PPG-11 stearyl ether  
 35 PPG-12-buteth-16  
 PPG-12-PEG-50 lanolin  
 PPG-14 butyl ether  
 PPG-20 cetyl ether  
 PPG-20-buteth-30  
 40 PPG-24-buteth-27  
 PPG-28-buteth-35  
 PPG-36 oleate  
 PPG-40 butyl ether  
 Quaternium-79 hydrolyzed keratin  
 45 Quaternium-79 hydrolyzed silk  
 Rice (*Oryza sativa*) starch  
 Shea butter (*Butyrospermum parkii*) extract  
 Shorea stenoptera butter  
 Silica  
 50 Stearamide MEA, S. MEA-stearate  
 Stearoxtrimethylsilane  
 Stearyl dimethicone  
 Triisostearyl citrate

Triolein  
 Trisodium HEDTA  
 Triundecanoin  
 Zinc laurate, Z. stearate

#### Miscellaneous

*Adhesion promoter* — Glycerin/diethylene glycol/adipate crosspolymer  
*Analgesic* — Glycol salicylate  
*Anesthetic* — Benzocaine  
*Anti-elastic* — Hydrolyzed *Ulva lactuca* extract  
*Anti-itching* — Sodium shale oil sulfonate  
*Antiacid* — Magnesium hydroxide, Magnesium silicate, Simethicone  
*Antifoam* — Dimethicone silylate, Simethicone  
*Antilipasic* — *Laminaria saccharina* extract  
*Antipruritic* — Coal tar  
*Antispasmodic* — Garlic (*Allium sativum*) extract  
*Antiwrinkle* — Chinese hibiscus (*Hibiscus rosa-sinensis*) extract  
*Barrier* — Glycerin/diethylene glycol/adipate crosspolymer  
*Cell regeneration* — Glycoproteins, Hydrolyzed *Ulva lactuca* extract  
*Co-emulsifier* —  
     Cholesteryl/behenyl/octyldodecyl lauroyl glutamate, Isododecane  
*Colloid* — Gelatin  
*Cooling agent* — Menthyl PCA, Menthone glycerin acetal  
*Detoxifier* — Clover (*Trifolium pratense*) extract  
*Dye stabilizer* — Uric acid  
*Filler* — Mica  
*Fragrance stabilizer* — 2,2',4,4'-Tetrahydroxybenzophenone  
*Free radical scavenger* — Melanin  
*IR filter* — *Corallina officinalis*  
*Lanolin substitute* — PEG-80 jojoba acid/alcohol  
*Lipolytic* — *Gelidium cartilagineum*  
*Oxidant* — Barium peroxide, Hydrogen peroxide, Urea peroxide  
*Oxygen carrier* — Perfluorodecalin  
*Peroxide stabilizer* — Phenacetin, Sodium stannate  
*Scalp stimulant* — Birch (*Betula alba*) leaf extract  
*Sebostatic* — *Laminaria saccharina* extract  
*Shine enhancer* — Hydrolyzed wheat protein hydroxypropyl polysiloxane  
*Skin barrier lipid* — Ceramide 3, N(27-Stearoyloxy-heptacosanoyl) phytosphingosine  
*Skin clarifier* — Oat (*Avena sativa*) bran extract  
*Skin purifier* — Birch (*Betula alba*) leaf extract

- Substantivity* — Dimethicone copolyol  
bishydroxyethylamine, Dimethicone  
hydroxypropyl trimonium chloride,  
Trimethylsilylamodimethicone
- 5 *Sunless tanning* — Acetyl tyrosine, Eclipta alba  
extract in white emulsion
- Tonic* — Kiwi (Actinidia chinensis) fruit extract,  
Matricaria (Chamomilla recutita) extract,  
Orange (Citrus aurantium dulcis) peel extract
- 10 *Viscosity stabilizer* — Diisodecyl adipate  
*Spreading agent* — Stearyl heptanoate  
*Wound healing* — Comfrey (Symphytum  
officinale) leaf extract
- 15 *Waterproofing agent* — PVP/eicosene copolymer,  
PVP/hexadecene copolymer, Tricontanyl  
PVP
- Moisture barrier**  
Acrylates/octylarylamide copolymer
- 20 Betaglukan  
C16-18 alkyl methicone  
Cholesterol  
Glycolipids  
Isoeicosane
- 25 Isohexadecane  
Lanosterol  
Octyl pelargonate, O. stearate  
Polyisobutene  
Polyisobutene/isohexapentacontahectane
- 30 Polyisobutene/isooctahexacontane  
Silica silylate  
Trihydroxypalmitamidohydroxy propyl myristyl  
ether  
Trimethylsiloxysilicate
- 35 **Moisturizer**  
Acetamidopropyl trimonium chloride  
Adenosine triphosphate  
Aesculus chinensis extract
- 40 Algae (Ascophyllum nodosum) extract  
Algae extract  
Aloe barbadensis, A.b. extract  
Ammonium lactate  
Amniotic fluid
- 45 Apple (Pyrus malus) extract  
Apricot (Prunus armeniaca) kernel oil  
Arginine PCA  
Atelocollagen  
Artemisia apiacea extract
- 50 Astrocryum murumuru extract  
Avocado (Persea gratissima) extract, oil  
Avocado (Persea gratissima) unsaponifiables  
Babassu (Orbignya oleifera) oil
- Bactri gasipaes extract  
Benincasa hispids extract  
Betaglukan  
Betaine  
Borage (Borago officinalis) seed oil  
Brazil nut (Bertholettia excelsa) extract, oil  
C10-30 cholesterol/lanosterol esters  
Calcium pantothenate  
Calcium protein complex  
Caprylic/capric triglyceride  
Caprylic/capric/lauric triglyceride  
Caprylic/capric/linoleic triglyceride  
Caprylic/capric/oleic triglycerides  
Cashew (Anacardium occidentale) nut oil  
Celastrus paniculata extract  
Ceramide 33 (liquid soy extract)  
Chia (Salvia hispanica) oil  
Chinese hibiscus (Hibiscus rosa-sinensis) extract  
Chitin  
Chitosan, C. PCA  
Cholesteric esters  
Cholesterol  
Cholesteryl/behenyl/octyldodecyl lauroyl  
glutamate  
Cocodimonium hydroxypropyl hydrolyzed  
collagen  
Cocodimonium hydroxypropyl hydrolyzed silk  
Cocodimonium hydroxypropyl hydrolyzed wheat  
protein  
Cocodimonium hydroxypropyl silk amino acids  
Collagen  
Collagen amino acids, C. phthalate  
Copper aspartate, C. protein complex  
Corn (Zea mays) oil  
Cottonseed (Gossypium) oil  
Crataegus cuneata extract  
Cucumber (Cucumis sativus) extract  
Desamido collagen  
Dicaprylyl maleate  
Diisocetyl dodecanedioate  
Diisostearyl adipate  
Dimethyl hyaluronate  
Dimethylsilanol hyaluronate  
Diocetyl dodecyl dimer diinoleate  
Diocetyl dodecyl dodecanedioate  
Dipentaerythritol fatty acid ester  
Dog rose (Rosa canina) hips extract  
Dog rose (Rosa canina) seed extract  
Echitea glauca extract  
Elastin amino acids  
Embllica officinalis extract  
Ethyl minkate  
Eugenia jambolana extract

	Evening primrose ( <i>Oenothera biennis</i> ) extract, oil	Lactamide DGA, L. MEA
	<i>Galla sinensis</i> extract	Lactic acid
	<i>Ganoderma lucidum</i> oil	Lactobacillus/whey ferment
	Ginseng ( <i>Panax ginseng</i> ) extract	Lactococcus hydrolysate
5	<i>Gleditsia sinensis</i> extract	Lactoyl methylsilanol elastinate
	Glycereth-12	Lanolin alcohol
	Glyceryl alginate, G. collagenate	Lauryl PCA
	Glyceryl polymethacrylate	Lecithin
	Glycolic acid	Lesquerella fendleri oil
10	Glycolipids	Liposomes
	Glycosaminoglycans	Lysine PCA
	Glycosphingolipids	Macadamia ternifolia nut oil
	<i>Gnetum amazonicum</i> extract	Magnesium aspartate
	Grape ( <i>Vitis vinifera</i> ) seed oil	Maltitol
15	Hazel ( <i>Corylus avellana</i> ) nut oil	Manganese aspartate
	Honey extract	Mango ( <i>Mangifera indica</i> ) oil
	Hyaluronic acid	Mannan
	Hybrid safflower ( <i>Carthamus tinctorius</i> ) oil	Marine polyaminosaccharide
	Hydrogenated castor oil	Mauritella armata extract
20	Hydrogenated coconut oil	Maximilliana regia extract
	Hydrogenated cottonseed oil	Meadowfoam ( <i>Limnanthes alba</i> ) seed oil
	Hydrogenated lecithin	Melaleuca hypericifolia extract
	Hydrogenated palm oil	Methylsilanol elastinate, M. mannuronate
	Hydrogenated polyisobutene	Milk amino acids
25	Hydrogenated soybean oil	Mineral oil ( <i>Paraffinum liquidum</i> )
	Hydrogenated soybean/cottonseed oil	Molybdenum aspartate
	Hydrogenated vegetable oil	Mouriri apiranga extract
	Hydrolyzed carbolipoprotein	Natto gum
	Hydrolyzed collagen	Nelumbium speciosum extract
30	Hydrolyzed elastin	Neopentyl glycol dicaprate
	Hydrolyzed fibronectin	Oat ( <i>Avena sativa</i> ) protein
	Hydrolyzed glycosaminoglycans	Octyl hydroxystearate
	hydrolyzed keratin	Ophiopogon japonicus extract
	Hydrolyzed milk protein	Orange ( <i>Citrus aurantium dulcis</i> ) peel wax
35	Hydrolyzed oats	Palmetto extract
	Hydrolyzed pea protein	Pantethine
	Hydrolyzed placental protein	Panthenyl ethyl ether
	Hydrolyzed rice protein	Paraffin
	Hydrolyzed transgenic collagen	Partially hydrogenated soybean oil
40	Hydrolyzed serum protein	peanut ( <i>Arachis hypogaea</i> ) oil
	Hydrolyzed silk	Pecan ( <i>Carya illinoensis</i> ) oil
	Hydrolyzed sweet almond protein	PEG-4, -6, -8, -12
	Hydrolyzed wheat protein	PEG-70 mango glycerides
	Hydroxyethyl chitosan	PEG-75 shea butter glycerides
45	Inositol	PEG-75 shorea butter glycerides
	Isodecyl salicylate	PEG-100 stearate
	Isostearyl hydrolyzed animal protein	Pentaerythrityl
	Jojoba ( <i>Buxus chinensis</i> ) oil	isostearate/caprate/caprylate/adipate
	Jojoba esters	Pentaerythrityl stearate/caprate/caprylate/adipate
50	Keratin amino acids	Pentylene glycol
	Kiwi ( <i>Actinidia chinensis</i> ) fruit extract	Perfluoropolymethylisopropyl ether
	Kola ( <i>Cola acuminata</i> ) extract	Petrolatum
	Kukui ( <i>Aleurites moluccana</i> ) nut oil	Petroleum wax

Pfaffia spp. extract  
 Pistachio (*Pistacia vera*) nut oil  
 Placental protein  
 Plankton extract  
 5 Polyamino sugar condensate  
 Polybutene  
 Polyunsaturated fatty acids  
 Potassium DNA, P. lactate, P. PCA  
 PPG-8/SMDI copolymer  
 10 PPG-20 methyl glucose ether distearate  
 Propylene glycol dicaprylate/dicaprate  
 Propylene glycol dioctanoate  
 Pumpkin (*Cucurbita pepo*) seed oil  
 Quinoa (*Chenopodium quinoa*) extract  
 15 Rapeseed (*Brassica campestris*) oil  
 Rehmannia chinensis extract  
 Rice (*Oryza sativa*) bran oil  
 Rose Water  
 Royal jelly extract  
 20 Saccharide isomerate  
 Saccharomyces lysate extract  
 Saccharomyces/soy protein ferment  
 Safflower (*Carthamus tinctorius*) oil  
 Selenium aspartate, S. protein complex  
 25 Sericin  
 Serum albumin  
 Sesame (*Sesamum indicum*) oil  
 Shea butter (*Butyrospermum parkii*)  
 Shea butter (*Butyrospermum parkii*) extract  
 30 Shorea stenoptera butter  
 Silk amino acids  
 Sodium carboxymethyl beta-glucan  
 Sodium chondroitin sulfate  
 Sodium DNA, S. hyaluronate  
 35 Sodium lactate, S. PCA  
 Souble collagen  
 Souble transgenic elastin  
 Soybean (*Glycine soja*) oil  
 Spherical cellulose acetate  
 40 Spondias amara extract  
 Squalene  
 Stomach extract  
 Sunflower (*Helianthus annuus*) seed oil  
 Superoxide dismutase  
 45 Tissue extract  
 Tocopheryl acetate, T. linoleate  
 Tomato (*Solanum lycopersicum*) extract  
 Tormentil (*Potentilla erecta*) extract  
 Trehalose  
 50 Triundecanoin  
 Vegetable oil  
 Walnut (*Juglans regia*) oil  
 Watercress (*Nasturtium officinale*) extract

Wheat (*Triticum vulgare*) germ extract, germ oil  
 Yarrow (*Achillea millefolium*) extract  
 Wheat amino acids  
 Yeast (*Saccharomyces cerevisiae*) extract (Faex)  
 Yogurt filtrate  
 Zinc aspartate  
 Ziziphus jujuba extract

#### Naturilizer

2-Aminobutanol  
 Aminoethyl propanediol  
 Aminomethyl propanediol  
 Aminomethyl propanol  
 Ammonium carbonate  
 Calcium hydroxide  
 Diethanolamine  
 Ethanolamine  
 Glucamine  
 Isopropanolamine  
 Isopropylamine  
 2-Methyl-4-hydroxypyrrolidine  
 Morpholine  
 Sodium bromate  
 Succinic acid  
 Tetrahydroxypropyl ethylenediamine  
 Triethanolamine  
 Tromethamine

#### Oil absorbent

Hydrated silica  
 Polymethyl methacrylate  
 Silicon dioxide hydrate  
 Walnut (*Juglans regia*) shell powder

#### Ointment base

Borage (*Borago officinalis*) seed oil  
 Caprylic/capric/stearic triglyceride  
 Glyceryl cocoate  
 Hydrogenated coco-glycerides  
 Lanolin  
 Mink oil  
 Oleostearine  
 Tallow

#### Opacifier

Barium sulfate  
 C12-16 alcohols  
 Cetearyl octanoate  
 Cetyl myristate, C. palmitate  
 Cocamidopropyl lauryl ether  
 Glyceryl distearate  
 Glyceryl hydroxystearate  
 Glyceryl myristate, G. stearate

- Glycol distearate, G. stearate  
 Magnesium myristate  
 PEG-2 distearate, P. stearate  
 PEG-2 stearate SE  
 5 PEG-3 distearate  
 Propylene glycol myristate, P.g. stearate  
 Stearamide  
 Stearamide DIBA-stearate  
 Stearamide MEA  
 10 Stearamide MEA-stearate  
 Stearamidopropyl dimethylamine lactate  
 Stearyl stearate  
 Styrene homopolymer  
 Styrene/acrylates copolymer  
 15 Styrene/PVP copolymer  
 Triisostearin PEG-6 esters

#### Plasticizer

- Acetyl tributyl citrate  
 20 Acetyl triethyl citrate  
 AMP-isostearoyl hydrolyzed wheat protein  
 AMPD-isostearoyl hydrolyzed collagen  
 Cyclohexane dimethanol dibenzoate  
 Dibutyl phthalate  
 25 Diethyl phthalate  
 Diethylene glycol dibenzoate  
 Diisopropyl sebacate  
 Dimethicone copolyol  
 Dimethyl phthalate  
 30 Dipropylene glycol dibenzoate  
 Ethyl ester of hydrolyzed keratin  
 Glycerol tribenzoate  
 Glycol  
 Hydrolyzed serum protein  
 35 Isocetyl salicylate  
 Isodecyl benzoate  
 Isoeicosane  
 Isopropyl lanolate  
 Isostearoyl hydrolyzed collagen  
 40 Lauroyl hydrolyzed collagen  
 Marine collagen  
 Monostearyl citrate  
 Neopentyl glycol dibenzoate  
 Octyl benzoate, O. laurate  
 45 PEG-60 shea butter glycerides  
 Pentaerythrityl tetrabenzoate  
 Polyoxyethylene glycol dibenzoate  
 Polypropylene glycol dibenzoate  
 PPG-12-PEG-50 lanolin  
 50 PPG-20 cetyl ether  
 PPG-20 lanolin alcohol ether  
 Propylene glycol dibenzoate  
 Propylene glycol myristyl ether acetate

Rice (Oryza sativa) bran wax  
 Serum protein  
 Tosylamide/epoxy resin  
 Triacetin  
 Tributyl citrate  
 Triethyl citrate  
 Trimethyl pentanediol dibenzoate  
 Trimethylethanetribenzoate

#### Polish

Acrylates copolymer  
 Aluminum silicate  
 Neatsfoot oil  
 Tallow

#### Polymer

Acrylamide sodium acrylate copolymer  
 Acrylates-VA crosspolymer  
 Acrylates/acrylamide copolymer  
 Acrylates/hydroxyesters acrylates copolymer  
 Acrylates/octylacrylamide copolymer  
 Acrylates/steareth-20 methacrylate copolymer  
 Adipic acid-epoxypropyl diethylenetriamine  
 copolymer  
 Adipic acid/dimethylaminohydroxypropyl  
 diethylene triamine copolymer  
 Ammonium acrylates copolymer  
 Ammonium acrylates/acrylonitrogens copolymer  
 AMP-acrylates copolymer  
 AMP-isostearoyl hydrolyzed collagen  
 Butylester of PVM-MA copolymer  
 Calcium carrageenan  
 Carboxylated vinylacetate terpolymer  
 Cetareth-2 phosphate  
 Cetareth-5 phosphate  
 Cetareth-10 phosphate  
 Cetareth-29, -34  
 Coco-glucoside  
 Cocodimonium hydroxypropyloxyethyl cellulose  
 C12-13 pareth-4, -9, -23  
 DEA-cetareth-2-phosphate  
 DEA-oleth-5-phosphate  
 DEA-oleth-20-phosphate  
 Diglycol/CHDM/isophthalates/SIP copolymer  
 Diisopropyl dimer dilinoleate  
 Diisostearoyl trimethylolpropane siloxy silicate  
 Diisostearyl dimer dilinoleate  
 Dilinoleic acid  
 Dodecanedioic acid/cetearyl alcohol/glycol  
 copolymer  
 Eclipta alba extract  
 Ethyl ester of PVM/MA copolymer  
 Ethylene/acrylic acid copolymer

- Ethylene/VA copolymer  
 Glycereth-26 phosphate  
 Hyaluronic acid  
 Hydrolyzed RNA  
 5 Hydrolyzed wheat protein polysiloxane polymer  
 Hydroxypropyltrimonium hydrolyzed collagen  
 Hydroxypropyltrimonium hydrolyzed wheat protein  
 Laneth-40  
 10 Lauryldimonium hydroxypropyl hydrolyzed soy protein  
 Methacrylol ethyl betaine/acrylates copolymer  
 Octylacrylamide/acrylates/butylaminoethyl methacrylate copolymer  
 15 Oleth-2 phosphate  
 Oleth-5 phosphate  
 PEG-3 lanolate  
 PEG-4 stearate  
 PEG-5M  
 20 PEG-7 glyceryl cocoate  
 PEG-8 glyceryl laurate  
 PEG-8/SMDI copolymer  
 PEG-9 castor oil  
 PEG-9M  
 25 PEG-11 babassu glycerides  
 PEG-12 palm kernel glycerides  
 PEG-12 stearate  
 PEG-14 avocado glycerides  
 PEG-15 glyceryl laurate  
 30 PEG-20 corn glycerides  
 PEG-20 evening primrose glycerides  
 PEG-20 glyceryl oleate  
 PEG-23 oleate  
 PEG-23M  
 35 PEG-29 castor oil  
 PEG-42 babassu glycerides  
 PEG-45 safflower glycerides  
 PEG-45M  
 PEG-60 evening primrose glycerides  
 40 PEG-60 hydrogenated castor oil  
 PEG-75 castor oil  
 PEG-90M  
 PEG-120 distearate  
 PEG-150 lanolin  
 45 PEG-160M  
 PG-hydroxycellulose lauryldimonium chloride  
 PG-hydroxyethylcellulose cocodimonium chloride  
 PG-hydroxyethylcellulose stearyldimonium chloride  
 50 Polyethylene, ionomer  
 Polyethylene, micronized  
 Polyethylene, oxidized  
 Polyglyceryl-2 polyhydroxystearate  
 Polymethacrylamidopropyltrimonium chloride  
 Polyquaternium-6, -7, -10, -11, -22, -39  
 Polysilicone-8  
 Potassium alginate  
 Potassium lauroyl collagen amino acids  
 Potassium lauroyl hydrolyzed soy protein  
 Potassium lauroyl wheat amino acids  
 PPG-8/SMDI copolymer  
 PPG-12/SMDI copolymer  
 PPG-51/SMDI copolymer  
 PVM/MA decadiene crosspolymer  
 PVP/dimethylaminoethylmethacrylate copolymer  
 PVP/VA copolymer  
 Sodium cocoyl hydrolyzed wheat protein  
 Steardimonium hydroxypropyl hydrolyzed wheat protein  
 Steareth-2 phosphate  
 TEA-acrylates/acrylonitrogens copolymer  
 Tosylamide/epoxy resin  
 Tosylamide/formaldehyde resin  
 Trideceth-5, -6, -7, -8  
 VA/butyl maleate/isobornyl acrylate copolymer  
 VA/crotonates/vinyl neodecanoate copolymer  
 Vinyl caprolactam/PVP/  
 dimethylaminoethylmethacrylate copolymer  
 Wheat (*Triticum vulgare*) protein  
 Xanthan gum  
  
**Powder**  
 Acrylates copolymer, spherical powder  
 Attapulgit  
 Boron nitride  
 Calcium aluminum borosilicate  
 Calcium carbonate  
 Cellulose triacetate  
 Corn (*Zea mays*) cob powder, starch  
 Hydrogenated jojoba wax  
 Magnesium carbonate, M. myristate  
 Magnesium stearate  
 Mica  
 Microcrystalline cellulose  
 Nylon-6  
 Nylon powder  
 Oat (*Avena sativa*) starch  
 Polyamide 12  
 Polyethylene  
 Polymethyl methacrylate  
 Polymethylsilsesquioxane  
 PTFE  
 Silica  
 Silk powder  
 Spherical cellulose acetate

	Talc	Methyl paraben sodium
	Tapioca dextrin	Methylchloroisothiazolinone
	Zinc laurate	Methyldibromo glutaronitrile
5	<b><u>Powder, absorbent</u></b>	Methylisothiazolinone
	Aluminum starch octenylsuccinate	Methylparaben
	Clays (white, yellow, red, green, pink)	Mushroom (Cordyceps sabolifera) extract
	Sorbitol	Myrtrimonium bromide
	Tapioca	Pentasodium pentetate
10		Pentetic acid
	<b><u>Preservative</u></b>	Phenethyl alcohol
	Alcohol	Phenol
	Ascorbic acid	Phenyl mercuric acetate
	Ascorbyl palmitate	o-Phenylphenol
15	Benzalkonium chloride	Polyaminopropyl biguanide
	Benzethonium chloride	Polymethoxy bicyclic oxazolidine
	Benzoic acid	Potassium sorbate
	Benzyl alcohol	Propylparaben
	Benzylparaben	Quaternium-15
20	5-Bromo-5 nitro-1,3-dioxane	Salicylic acid
	2-Bromo-2-nitropropane-1,2-diol	Sodium benzoate, S. bisulfate
	Butylparaben	Sodium butylparaben, S. dehydroacetate
	Calcium propionate	Sodium erythorbate, S. ethyl paraben
	Cetrimonium bromide	Sodium hydroxymethylglycinate
25	Cetyl pyridinium chloride	Sodium metabisulfite, S. methylparaben
	Chloroxyleneol	Sodium o-phenylphenate
	Chlorphenesin	Sodium propionate, S. propylparaben
	o-Cymen-5-ol	Sodium pyrrhione, S. salicylate
	Diazolindinyl urea	Sodium sulfite
30	Dichlorobenzyl alcohol	Sorbic acid
	Dichlorophene	Tetrasodium EDTA
	Diiodomethyltolylsulfone	Thimerosal
	Dimethyl hydroxymethyl pyrazole	Thymol
	Dimethyl oxazolidine	Tris (hydroxymethyl) nitromethane
35	Disodium EDTA	Trisodium EDTA, T. HEDTA
	DMDM hydantoin	Usnic acid
	EDTA	Zinc PCA
	Erythorbic acid	
	7-Ethylbicyclooxazolidine	<b><u>Propellant</u></b>
40	Ethylparaben	Butane
	Fomistopsis officinalis oil	Dimethyl ether
	Formaldehyde	Hydrofluorocarbon 152a
	Glutaral	Isobutane
	Glycerol laurate	Propane
45	HEDTA	
	Hexamidine diisethionate	<b><u>Protein</u></b>
	Hexetidine	Albumen
	Imidazolidinyl urea	Atelocollagen
	Isobutylparaben	Bletia hyacinthina extract
50	Isopropyl sorbate	Chrysanthemum morifolium extract
	Isopropylparaben	Cocodimonium hydroxypropyl hydrolyzed collagen
	MDM hydantoin	Cocodimonium hydroxypropyl hydrolyzed keratin
	Methenammonium chloride	

	Cocodimonium hydroxypropyl hydrolyzed soy protein	Sodium stearoyl hydrolyzed collagen
	Cocodimonium hydroxypropyl hydrolyzed wheat protein	Sodium undecylenoyl hydrolyzed collagen
5	Cocoyl hydrolyzed collagen	Sodium/TEA-lauroyl hydrolyzed collagen
	Collagen, C. phthalate	Sodium/TEA-lauroyl hydrolyzed keratin
	Collagen amino-polysiloxane hydrolyzate	Soluble collagen
	Deoxyribonucleic acid	Soluble keratin
	Desamido collagen	Soluble wheat protein
10	Elastin amino acids	Soy (Glycine soja) protein
	Embryo extract	Stearimonium hydroxypropyl hydrolyzed collagen
	Ethyl ester of hydrolyzed animal protein	Steartrimonium hydroxyethyl hydrolyzed collagen
	Fibronectin	TEA-cocoyl hydrolyzed collagen
	Gelatin	TEA-cocoyl hydrolyzed soy protein
15	Human placental protein	TEA-lauroyl collagen amino acids
	Hydrolyzed collagen	TEA-lauroyl keratin amino acids
	Hydrolyzed extensin	Trachea hydrolysate
	Hydrolyzed fish protein	Triethonium hydrolyzed collagen ethosulfate
	Hydrolyzed hemoglobin	Wheat (Triticum vulgare) germ extract, protein
20	Hydrolyzed keratin	Wheat amino acids
	Hydrolyzed lactalbumin	Wheat peptide
	Hydrolyzed milk protein	Wheat protein
	Hydrolyzed soy flour	
	Hydrolyzed sweet almond protein	<b><u>Protein, hydrolyzed</u></b>
25	Hydroxypropyltrimonium hydrolyzed collagen	Ethyl ester of hydrolyzed silk
	Isostearoyl hydrolyzed collagen	Hydrolyzed casein
	Keratin	Hydrolyzed elastin
	Lactoferrin	Hydrolyzed mushroom (Tricholoma matsutake) extract
	Lactoglobulin	Hydrolyzed pea protein
30	Lauryldimonium hydroxypropyl hydrolyzed collagen	hydrolyzed rice protein
	Marine collagen	Hydrolyzed serum protein
	Methylsilanol elastinate	Hydrolyzed silk
	Potassium abietoyl hydrolyzed collagen	Hydrolyzed soy protein
35	Potassium cocoyl hydrolyzed collagen	Hydrolyzed vegetable protein
	Potassium myristoyl hydrolyzed collagen	Hydrolyzed wheat protein
	Potassium oleoyl hydrolyzed collagen	Hydroxypropyltrimonium hydrolyzed casein
	Potassium undecylenoyl hydrolyzed collagen	Hydroxypropyltrimonium hydrolyzed silk
	Propyltrimonium hydrolyzed collagen	Hydroxypropyltrimonium hydrolyzed soy protein
40	Propyltrimonium hydrolyzed soy protein	Hydroxypropyltrimonium hydrolyzed wheat protein
	Propyltrimonium hydrolyzed wheat protein	
	Protein hydrolysates	<b><u>Reducing agent</u></b>
	Quaternium-79 hydrolyzed keratin	Dimyristyl thiodipropionate
	Quaternium-79 hydrolyzed silk	Hydrolyzed zein, iodized
45	Rice peptide	Hydrolyzed zein, sulfurized
	RNA	Zinc formaldehyde sulfoxylate
	Serum albumin, S. protein	
	Silk powder	<b><u>Refatting agent</u></b>
	Sodium caseinate	Caprylic/capric triglyceride PEG-4 esters
50	Sodium cocoyl hydrolyzed collagen	Cocamide MIPA
	Sodium cocoyl hydrolyzed soy protein	Diisostearyl dimer dilinoleate
	Sodium myristoyl hydrolyzed collagen	Hydrogenated palm kernel glycerides
	Sodium oleoyl hydrolyzed collagen	



- Isostearyl erucate, I. isostearate  
 Lecithin  
 Liposómes  
 Magnesium sulfate hepta-hydrate  
 5 Octyldodecyl behenate, O. myristate  
 bis-Octyldodecyl stearoyl dimer dilinoleate  
 Octyldodecyl stearoyl stearate  
 Octyl hydroxystearate  
 PEG-3 stearate  
 10 PEG-4 oleamide  
 PEG-6 capric/caprylic glycerides  
 PEG-7 glyceryl cocoate  
 PEG-16  
 Propylene glycol dipelargonate  
 15
- Resin**  
 Acrylates/hydroxyesters acrylates copolymer  
 Ethylene vinyl acetate  
 Glyceryl abietate  
 20 Methacryloyl ethyl betaine/acrylates copolymer  
 4-Methyl benzenesulfonamide  
 Polypropylene  
 Polyquaternium-16, -44  
 Sucrose benzoate  
 25
- Sequestrant**  
 Calcium acetate, C. phosphate, C. sulfate  
 Encapsulation and entrapment systems  
 Pentasodium triphosphate  
 30 Phosphoric acid  
 Potassium phosphate, P. sodium tartrate  
 Silicon dioxide hydrate  
 Sodium citrate, S. gluconate  
 Sorbitol  
 35 Tartaric acid  
 Tripotassium EDTA  
 Trisodium NTA
- Silicone**  
 40 Amino bispropyl dimethicone  
 Ammonium dimethicone copolyol sulfate  
 Amodimethicone  
 Behenoxy dimethicone  
 C16-18 alkyl methicone  
 45 Cetyl dimethicone copolyol  
 Cyclomethicone  
 Diisodecyl adipate  
 Diisostearyl trimethylolpropane siloxy silicate  
 Dimethicone  
 50 Dimethicone copolyol  
 Dimethicone copolyol almondate  
 Dimethicone copolyol isostearate  
 Dimethicone copolyol olivate, D.c. phthalate
- Dimethicone copolyolamine  
 Dimethiconol fluoroalcohol dilinoleic acid  
 Dimethiconol hydroxystearate, D. stearate  
 Diphenyl dimethicone  
 Disodium-PG-propyldimethicone thiosulfate  
 Isopropyl hydroxybutyramide dimethicone  
 copolyol  
 Methicone  
 Octamethyl cyclotetrasiloxane  
 Phenyl methicone, P. trimethicone  
 Polyether Trisiloxane  
 Polymethylsilsequioxane  
 Polysilicone-8  
 Quaternium-80  
 Silicone quaternium-1, -8  
 Sodium-PG-propyl thiosulfate dimethicone  
 Stearoxymethicone/dimethicone copolymer  
 Trimethylsilylamodimethicone
- Skin calming agent**  
 Cornflower (Centaurea cyanus) extract  
 Fennel (Foeniculum vulgare) extract  
 Fenugreek extract  
 Linden (Tilia cordata) extract  
 Valerian (Valeriana officinalis) extract
- Skin cleanser**  
 Dog rose (Rosa canina) hips extract  
 Papaya (Carica papaya) extract  
 Peach (Prunus persica) extract  
 Rose (Rosa multiflora) extract  
 Willow (Salix alba) extract
- Skin conditioner**  
 Artemisia apiacea extract  
 Astrocaryum tucuma extract  
 Bactris gasipaes extract  
 Biotin  
 Bishydroxyethyl biscetyl malonamide  
 Bletia hyacinthina extract  
 Borage (Borago officinalis) seed oil  
 Borageamidopropyl phosphatidyl PG-dimonium  
 chloride  
 Carbocysteine  
 Catalpa kaempfera extract  
 Coco phosphatidyl PG-dimonium chloride  
 Cocodimonium hydroxypropyl hydrolyzed  
 keratin  
 Collagen amino acids  
 Cyclomethicone  
 Dimethicone, D. copolyol acetate  
 Emblica officinalis extract  
 Equisetum arvense extract

- Ethyl ester of hydrolyzed animal protein  
 Evening primrose (*Oenothera biennis*) oil  
 Fomes fomentarius extract  
 Fomistopsis officinalis oil  
 5 Gelatin  
 Ginseng hydroxypropyltrimonium chloride  
     butylene glycol  
 Glycolipids  
 Glycosphingolipids  
 10 Gnetum amazonicum extract  
 Honey (Mel)  
 Hydrolyzed carbolipoprotein  
 Hydrolyzed elastin  
 Hydrolyzed pea protein  
 15 Hydrolyzed rice protein  
 Hydrolyzed serum protein  
 Hydrolyzed silk  
 Hydrolyzed soy protein  
 Hydrolyzed vegetable protein  
 20 Hydrolyzed wheat protein  
 Inga edulis extract  
 Kiwi (*Actinidia chinensis*) fruit extract  
 Laminaria japonica extract  
 Lecithin  
 25 Marsilea minuta extract  
 Nettle (*Urtica dioica*) extract  
 Palmitamidodecanediol  
 Pearls (*Margarita margarita*)  
 PEG-42 Ebiriko ceramides extract  
 30 Phenyl trimethicone  
 Phytantriol  
 Polygonum multiflorum extract
- 
- 35 Potassium cocoyl hydrolyzed collagen  
 Retinyl palmitate polypeptide  
 Salvia miltiorrhiza extract  
 Silt  
 Sodium cocoyl hydrolyzed collagen  
 40 Soluble transgenic elastin  
 Steartrimonium hydroxyethyl hydrolyzed  
 collagen  
 Stearyl methicone
- 45 **Skin healing**  
 Calendula officinalis extract  
 Glycoproteins  
 Hydrocotyl (*Centella asiatica*) extract  
 Oat (*Avena sativa*) extract  
 50 Sandalwood (*Santalum album*) extract  
 Spearmint (*Mentha viridis*) extract

**Skin lightening/whitening agent**

Ascorbic acid polypeptide  
 Bearberry (*Arctostaphylos uva-ursi*) extract  
 Hydroquinone-beta-D-glucopyranoside  
 Lemon (*Citrus medica limonum*) peel extract  
 Pearls (*Margarita margarita*)

**Skin protectant**

Acetylmethionyl methylsilanol elastinate  
 Allantoin, A. aluminum hydroxide  
 Aloe barbadensis, A.b. extract  
 Aluminum starch octenylsuccinate  
 Anise (*Pimpinella anisum*) extract  
 Arnica montana extract  
 Artemisia apiacea extract  
 Ascorbyl methylsilanol pectinate  
 Astrocaryum tucuma extract  
 Bactris gasipaes extract  
 Betaglucon  
 Bishydroxyethyl biscetyl malonamide  
 Bletia hyacinthina extract  
 C18-70 Isoparaffin  
 Calendula amurensis extract  
 Carboxymethyl chitin  
 Carcinia cambogia extract  
 Carrot (*Daucus carota*) extract  
 Carrot (*Daucus carota sativa*) oil  
 Catalpa kaempfera extract  
 Chenopodium album extract  
 Chitosan  
 Chrysanthemum morifolium extract  
 Collagen  
 Corn poppy (*Papaver rhoeas*) extract  
 Crataegus cuneata extract  
 Crataegus monogina extract  
 Cypress (*Cupressus sempervirens*) extract  
 Dimethicone  
 Dimethiconol fluoroalcohol dilinoleic acid  
 Dimethiconol hydroxystearate, D. stearate  
 Dimethylsilanol hyaluronate  
 Echitea glauca extract  
 Embryo extract  
 Entada phaseoloides extract  
 Equisetum arvense extract  
 Eupatorium fortunei extract  
 Euterpe precatoria extract  
 Fenugreek extract  
 fomistopsis officinalis oil, F. pinicola extract  
 Galla sinensis extract  
 Gentian (*Gentiana lutea*) extract  
 Gleditsia sinensis extract  
 Glyceryl ricinoleate  
 Glycolipids  
 Hierochloa odorata extract

- Hyaluronic acid  
 Hydrogenated lecithin  
 Hydrofyzed lupine protein  
 Hydrolyzed milk protein  
 5 Hydrolyzed mushroom (*Tricholoma matsutake*)  
     extract  


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 Isodecyl salicylate  
 10 Jojoba (*Buxus chinensis*) oil  
 Lady's Thistle (*Silybum marianum*) extract  
 Laminaria japonica extract  
 Ligusticum jeholense extract  
 Liposomes  
 Magnolis spp. extract  
 15 Mango kernel oil  
 marsilea minuta extract  
 Melaleuca hypericifolia extract  
 Melaleuca uncinata extract  
 Melaleuca wilsonii extract  
 20 Methylsilanol tri PEG-8 glyceryl cocoate  
 Oat (*Avena stiva*) meal  
 Oyster (*Ostrea*) shell extract  
 Palmitamidodecanediol  
 Pearls (*Margarita margarita*)  
 25 Pentahydrosqualene  
 Perfluorodecalin  
 Perfluoropolymethylisopropyl ether  
 Petrolatum  
 PEG-8/SMDI copolymer  
 30 PEG-42 Ebiriko ceramides extract  
 Pfaffia spp. extract  
 Phospholipids  
 Plankton extract  
 Polygonum multiflorum extract  
 35 Pongamol  
 PPG-12/SMDI Copolymer  
 PPG-51/SMDI Copolymer  
 Propyltrimonium hydrolyzed collagen  
 Quinoa (*Chenopodium quinoa*) extract, oil  
 40 *Salvia miltiorrhiza* extract  
*Sambucus nigra* extract  
 Shark liver oil  
 Shorea robusta extract  
 Sodium chondroitin sulfate  
 45 Soluble transgenic elastin  
 Steartrimonium hydroxyethyl hydrolyzed  
 collagen  
 Sterculia platanifolia extract  
 Superoxide dismutase  
 50 Trachea hydrolysate  
 Wheat (*Triticum vulgare*) germ extract, protein  
 White nettle (*Lamium album*) extract  
 Withania somniferum extract

Xanthozylum bungeanum extract  
 Zinc oxide

#### Skin smoothing agent

Althea officinalis extract  
 Coltsfoot (*Tussilago farfara*) leaf extract  
 Comfrey (*Symphytum officinale*) leaf extract  
 Plantain (*Plantago major*) extract  
 Sericin

#### Skin softening

Clays (white, yellow, red, green, pink)  
 Cucumber (*Cucumis sativus*) extract  
 Kelp (*Macrocystis pyrifera*) extract  
 Peach (*Prunus perisca*) extract  
 Phenethyl dimethicone

#### Skin soothing

Calendula officinalis extract  
 Cherry bark extract  
 Cucumber (*Cucumis sativus*) extract  
 Garlic (*Allium sativum*) extract  
 Hyssop (*Hyssopus officinalis*) extract  
 Jasmine (*Jasminum officinale*) extract  
 Kelp (*Macrocystis pyrifera*) extract  
 Mango kernel oil  
 Meadowsweet (*Spiraea ulmaria*) extract  
 Quince (*Pyrus cydonia*) seed extract  
 Slippery elm extract  
 Valerian (*Valeriana officinalis*) extract  
 Willow (*Salix alba*) extract  
 Witch hazel (*Hamamelis virginiana*) extract

#### Solubilizer

Acetyl monoethanolamine  
 Almond oil PEG-6 esters  
 2-Aminobutanol  
 Aminoethyl propanediol  
 Aminomethyl propanediol, A. propanol  
 Apricot kernel oil PEG-6 esters  
 Benzalkonium chloride  
 Butoxydiglycol  
 Butyl glucoside  
 Butylene glycol  
 Butyloctanol  
 Capric-caprylic mono-diglyceride  
 Capryl caprylglycoside  
 Caprylic/capric triglyceride  
 Caprylic/capric/linoleic triglyceride  
 Caprylic/capric/oleic triglycerides  
 Caprylyl/capryl glucoside  
 Ceteareth-20

	Ceteth-10	PEG-40 hydrogenated castor oil PCA isostearate
	Cetyl PPG-2 isodeceth-7 carboxylate	PEG-40 sorbitan diisostearate
	Cholesterol	PEG-45 palm kernel glycerides
	Corn oil PEG-6 esters	PEG-48 hydrogenated castor oil
5	Decaglycerol monodiolate	PEG-50 castor oil
	Diethanolamine	PEG-50 hydrogenated castor oil
	Dilaureth-10 phosphate	PEG-60 almond glycerides
	Dimethyl octynediol	PEG-60 castor oil
	Dioleth-8 phosphate	PEG-60 corn glycerides
10	Glycereth-7 -26	PEG-60 glyceryl isostearate, P.g. stearate
	Glyceryl caprylate, G. dilaurate	PEG-60 hydrogenated castor oil
	Glyceryl caprylate/caprate	PEG-60 lanolin
	Isoeicosane	PEG-70 mango glycerides
	Isopropanolamine	PEG-75 lanolin
15	Isosteareth-20	PEG-75 shea butter glycerides
	Laneth-5, -15	PEG-75 shorea butter glycerides
	Laureth-23	PEG-80 hydrogenated castor oil
	Methylated cyclodextrin	PEG-80 jojoba acid/alcohol
	Myreth-3	PEG-80 sorbitan laurate
20	Myreth-3-octanoate	PEG-100 castor oil
	Nonoxynol-10, -12, -14, -40, -50	PEG-100 hydrogenated castor oil
	Octoxynol-11, -40	PEG-120 jojoba acid/alcohol
	Oleoamphohydroxypropylsulfonate	PEG-200 trihydroxystearin
	Oleth-3, -5, -10, -15, -20, -25, -50	Poloxamer 407
25	Oleth-20 phosphate	Polyglyceryl-3 oleate
	PEG-4, -6, -8, -12, -16, -20, -32, -40	Polyglyceryl-6 dioleate
	PEG-4 dilaurate	Polyglyceryl-10 decaoleate, P. tetraoleate
	PEG-6 capric/caprylic glycerides	Polysorbate 20, 60, 80
	PEG-6 methyl ether	PPG-2-isodeceth-4, -6, -9, -12
30	PEG-8 distearate	PPG-3 isosteareth-9
	PEG-12 laurate	PPG-3 isoceteth-20 acetate
	PEG-15 castor oil	PPG-5-ceteth-10 phosphate
	PEG-18 stearate	PPG-5-ceteth-20
	PEG-20 glyceryl isostearate, P.g. laurate	PPG-6-decyltetradeceth-12, -20, -30
35	PEG-20 glyceryl oleate, P.g. stearate	PPG-12-PEG-65 lanolin oil
	PEG-20 methyl glucose sesquisteate	PPG-15 stearyl ether
	PEG-20 sorbitan isostearate	PPG-18 butyl ether
	PEG-20 sorbitan triisostearate	PPG-24 butyl ether
	PEG-24 hydrogenated lanolin	PPG-26-buteth-26
40	PEG-25 castor oil	PPG-33 butyl ether
	PEG-25 hydrogenated castor oil	PPG-33-buteth-45
	PEG-30 castor oil	PPG-40-PEG-60 lanolin oil
	PEG-30 glyceryl cocoate	PPG-50 cetyl ether
	PEG-30 glyceryl isostearate	Propylene glycol dicaprylate,
45	PEG-30 glyceryl laurate	dicaprylate/dicaprate
	PEG-30 glyceryl oleate	Ricinoleamide DEA
	PEG-30 glyceryl stearate	Ricinoleth-40
	PEG-33 castor oil	Sodium alpha olefin sulfonate
	PEG-35 castor oil	Sodium lauryl sulfate
50	PEG-36 castor oil	Sodium methylnaphthalenesulfonate
	PEG-40 castor oil	Triethanolamine
	PEG-40 glyceryl laurate, P.g. stearate	Trioctanoin
	PEG-40 hydrogenated castor oil	Tromethamine

**Solvent**

- Acetic acid  
Acetone  
Alcohol, A. denat  
5 Benzophenone  
Butoxydiglycol  
Butyl acetate  
n-Butyl alcohol  
Butyl myristate, B. stearate  
10 Butylene glycol  
C9-11 isoparaffin  
C10-11 isoparaffin  
C10-13 isoparaffin  
Caprylic alcohol  
15 Castor (*Ricinus communis*) oil  
Cetearyl octanoate  
Cetyl stearyl octanoate  
Chlorobutanol  
Decyl alcohol  
20 Diethylene glycol  
Diethylene glycol dibenzoate  
Diethyl sebacate  
Diisocetyl adipate  
Diisopropyl adipate, D. sebacate  
25 Dimethyl phthalate  
Dipropylene glycol  
Dipropylene glycol dibenzoate  
Ethoxydiglycol  
Ethyl acetate, E. lactate  
30 Ethyl myristate, E. oleate  
2-Ethylhexyl isostearate  
Glycerin  
Glycofurol  
Heptane  
35 Hexyl alcohol  
Hexylene glycol  
Isobutyl stearate  
Isocetyl salicylate  
Isodecyl benzoate, I. isononanoate  
40 Isodecyl octanoate, I. oleate  
Isododecane  
Isoeicosane  
Isohexadecane  
Isopropyl alcohol, I. myristate  
45 Isostearyl stearoyl stearate  
Laureth-2 acetate  
Methoxydiglycol  
Methoxyisopropanol  
Methyl alcohol  
50 Methyl propanediol  
Methylene chloride  
MEK  
MIBK

**Morpholine**

- Octyl benzoate, O. isononanoate  
Octyl laurate, O. palmitate  
Octyldodecyl lactate  
Olive oil PEG-6 esters  
Peanut oil PEG-6 esters  
Pentane  
Petroleum distillates  
PEG-6 methyl ether  
PEG-12  
PEG-20 hydrogenated castor oil  
PEG-33 castor oil  
PEG-50 glyceryl cocoate  
Polyglyceryl-2 dioleate  
Polyglyceryl-3 diisostearate  
Polyoxyethylene glycol dibenzoate  
Polypropylene glycol dibenzoate  
PPG-2 myristyl ether propionate  
PPG-3  
PPG-20 lanolin alcohol ether  
Propyl alcohol  
Propylene carbonate  
Propylene glycol  
Propylene glycol dibenzoate  
Propylene glycol methyl ether  
Propylene glycol myristate  
Pyridine  
Sesame (*Sesamum indicum*) oil  
Stearyl heptanoate  
Toluene  
Xylene

**SPF booster**

- Borojoa sorbilis extract  
Isohexadecyl salicylate  
Styrene/acrylates copolymer  
Titanium dioxide  
Yeast (*Saccharomyces cerevisiae*) extract (Faex)

**Stabilizer**

- Acrylates-VA crosspolymer  
Acrylates/ceteth-20 methacrylates copolymer  
Acrylates/steareth-20 methacrylate copolymer  
Acrylates/vinyl isodecanoate crosspolymer  
Alkyldimethylamine oxide  
C10 polycarbamyl polyglycol ester  
Calcium alginate  
Cocamidopropyl dimethylamine lactate  
Cocamine oxide  
Colloidal silica sols  
Cyclodextrin  
Disodium EDTA  
Gellan gum

- Glyceryl diisostearate, G. stearate SE  
 Glyceryl mono-di-tri-caprylate  
 Hydrogenated coco-glycerides  
 Hydrogenated C12-18 triglycerides  
 5 Hydrogenated tallow glycerides  
 Hydrolyzed oat flour  
 Hydroxyoctacosanyl hydroxystearate  
 Karaya (*Sterculia urens*) gum  
 Laureth-3  
 10 Maltitol  
 Methylated cyclodextrin  
 Oleamide  
 PEG-40 stearate  
 PEG-40/dodecyl glycol copolymer  
 15 Perfluoropolymethylisopropyl ether  
 Polyethylene paste  
 PPG-5 lanolin wax  
 PPG-7-buteth-10  
 PPG-10 cetyl ether phosphate  
 20 Propylene carbonate, P. glycol alginate  
 PVM/MA decadiene crosspolymer  
 Sodium acrylates/vinyl isodecanoate  
 crosspolymer  
 Sodium carbomer  
 25 Sorbitan laurate  
 Stearic hydrazide  
 2,2',4,4'-Tetrahydroxybenzophenone  
 Tricaprin  
 Tricaprylin  
 30 Trilaurin  
 Trimyristin  
 Tripalmitin  
 Tristearin  
 35 **Stimulant**  
 Capsicum frutescens extract  
 Eleuthero ginseng (*Acanthopanax senticosus*)  
 extract  
 Guarana (*Paullinia cupana*) extract  
 40 Lactococcus hydrolysate  
 Methylsilanol elastinate  
 Methylsilanol hydroxyproline aspartate  
 TEA-hydroiodide  
 Tocopheryl nicotinate  
 45 Urocanic acid  
 Yeast (*Saccheromyces cerevisiae*) extrate (Faex)  
 Zedoary (*Curcuma zedoraria*) oil  
 Zinc DNA  
 50 **Sunscreen**  
 Basil (*Basilicum santum*) oil extract  
 Basil (*Ocimum basilicum*) extract  
 Benzophenone-3 -4  
 3-Benzylidene camphor  
 Borojoa sorbilis extract  
 C12-15 alkyl benzoate  
 Coffee (*Coffea arabica*) bean extract  
 Ethyl salicylate  
 Glyceryl PABA  
 Homosalate  
 Hydroquinone-beta-D-glucopyranoside  
 Isoamyl p-methoxycinnamate  
 Isopropylbenzyl salicylate  
 Job's tears (*Coix lacryma-jobi*) extract  
 Menthyl anthranilate  
 Octyl dimethyl PABA, O. methoxycinnamate  
 Octyl salicylate, O. triazone  
 Oryzanol  
 Pansy (*Viola tricolor*) extract  
 PEG-25 PABA  
 Phenylbenzimidazole sulfonic acid  
 Rice (*Oryza sativa*) bran oil  
 TEA-salicylate  
 Titanium dioxide  
**Sunscreen UVB**  
 Benzophenone-5  
 Eclipta alba extract  
 PEG-25 PABA  
 Steareth-100  
 Tridecyl salicylate  
**Superfating agent**  
 Linoleamide DEA  
 PEG-20 almond glycerides  
 PEG-60 lanolin  
 PEG-75 lanolin  
**Surfactant**  
 Alkyl dimethyl betaine  
 Alkyldimethylamine oxide  
 Ammonium cocoyl sarcosinate  
 Ammonium C12-15 alkyl sulfate  
 Ammonium dimethicone copolyol sulfate  
 Ammonium laureth-5 sulfate  
 Ammonium laureth-12 sulfate  
 Ammonium laureth sulfate  
 Ammonium lauroyl sarcosinate  
 Ammonium lauryl sulfate, A.I. sulfosuccinate  
 Ammonium myreth sulfate  
 Ammonium nonoxynol 4 sulfate  
 Azelamide MEA  
 C20-40 alcohol ethoxylate  
 C30-50 alcohol ethoxylate  
 C40-60 alcohol ethoxylate  
 Calcium dodecylbenzene sulfonate

	Calcium laurate	Disodium oleth-3 sulfosuccinate
	Ceteareth-2 phosphate	Disodium ricinoleamido MEA-sulfosuccinate
	Ceteareth-5 phosphate	Disodium tallamido MEA-sulfosuccinate
	Ceteareth-10 phosphate	Disteareth-2 lauroyl glutamate
5	Cetoleth-25	Disteareth-5 lauroyl glutamate
	Cetyl betaine, C. phosphate	Ethoxylated fatty alcohol
	Cocamide MEA ethoxylate	Ethoxylated glycerol sorbitan saturated fatty acid ester
	Cocamidopropyl betaine, potassium salt	Ethoxylated glycerol sorbitan unsaturated fatty acid ester
	Cocamidopropyl betaine ammonium salt	Glycereth-25 PCA isostearate
10	Cocamidopropyl hydroxy sultaine	Glycereth-26 phosphate
	Cocamidopropyl hydroxy sultaine, ammonium salt	glyceryl hydroxystearate
	Cocamidopropyl hydroxy sultaine, potassium salt	Hydrogenated tallowoyl glutamic acid
15	Cocamidopropylamine oxide	Isopropyl hydroxybutyramide dimethicone
	Coceth-7 carboxylic acid	coppolyol
	Coco-glucoside	Lauramidopropyl betain
	Cocoamphodiacetate lauryl-laureth sulfate	Laureth-1, -2, -3, -4, -7, -12, -16
	Cocoamphodiacetate lauryl sulfate	Laureth-3 carboxylic acid, L. phosphate
	Cocoamphodiacetate trideceth sulfate	Laureth-5 carboxylic acid
20	Coco phosphatidyl PG-dimonium chloride	Laureth-11 carboxylic acid
	N-Cocoyl-(3-amidopropyl)-N,N-dimethyl-N-ethyl ammonium ethyl sulfate	Lauroyl sarcosine
	Cocoyl glutamic acid	Lauryl dimethylamine cyclocarboxypropylolate
	Cocoyl hydrolyzed soy protein	Laryl hydroxyethyl imidazoline
25	Cocoyl hydroxyethyl imidazoline	Linoleamide DEA
	C11-15 pareth-9, -12, -20, -30, -40	Magnesium laureth-8 sulfate
	C12-13 pareth sulfate	Meroxapol 105, 171, 172
	C12-13 pareth-5 carboxylic acid	MEA-lauryl sulfate
	C12-15 pareth-12	Mixed isopropanolamines myristate
30	C14-15 pareth-8 carboxylic acid	Myreth-7
	DEA-oleth-5-phosphate	Myristoyl sarcosine
	DEA-oleth-20-phosphate	Myristyl alcohol
	Deceth-3, -6, -8	Nonoxynol-7, -9, -13, -15
	Decyltetradeceth-25	Nonoxynol-10 carboxylic acid
35	Diceteareth-10 phosphoric acid	Octoxynol-10, -12
	Dimethicone copolyol	Octyldodeceth-10, -16
	Dimethicone copolyol almondate, D.c. isostearate	Oleoyl sarcosine
	Dimethicone copolyol laurate, D.c. olivate	Oleth-2 phosphate
40	Dimethicone copolyol phthalate	Oleth-5 phosphate
	Dimethicone copolyolamine	Oleyl betaine
	Dimethicone propyl PG-betaine	Oleyl hydroxyethyl imidazoline
	Diocetyldodeceth-2 lauroyl glutamate	Palmitamine oxide
	Diocetyldodeceth-5 lauroyl glutamate	Palmityl betaine
45	Diocetyldodecyl lauroyl glutamate	PCA ethyl cocoyl arginate
	Disodium capryloamphodiacetate	PEG-7 hydrogenated castor oil
	Disodium cocoamphodiacetate	PEG-8 caprylic/capric glycerides
	Disodium hydrogenated tallow glutamate	PEG-8 laurate
	Disodium laneth-5 sulfosuccinate	PEG-8 stearate
50	Disodium lauramido MEA-sulfosuccinate	PEG-15 glyceryl stearate
	Disodium laureth sulfosuccinate	PEG-25 glyceryl isostearate
	Disodium oleamido MIPA-sulfosuccinate	PEG-27 lanolin
	Disodium oleamido PEG-2 sulfosuccinate	PEG-30 lanolin
		PEG-40 castor oil

	PEG-40 glyceryl stearate	Sodium laureth-11 carboxylate
	PEG-40 jojoba oil, P. lanolin	Sodium laureth-13-carboxylate
	PEG-60 glyceryl isostearate, P.g. stearate	Sodium laureth sulfate
	PEG-80 jojoba oil, P. sorbitan laurate	Sodium lauroamphoacetate
5	PEG-120 jojoba oil	Sodium lauroyl glutamate
	Pentasodium triphosphate	Sodium lauroyl hydrolyzed collagen
	Poloxamer 101, 122	Sodium lauroyl sarcosinate, S.I. taurate
	Polyglyceryl-2 dioleate	Sodium magnesium laureth sulfate
	Polysiloxane-polyether copolymer	Sodium methyl cocoyl taurate
10	Potassium cocoyl glycinate	Sodium methyl oleoyl taurate
	Potassium cocoyl hydrolyzed collagen	Sodium myristoyl glutamate
	Potassium C9-15 phosphate ester	Sodium myristoyl hydrolyzed collagen
	Potassium lauroyl hydrolyzed collagen	Sodium myristoyl sarcosinate
	Potassium lauryl sulfate	Sodium myristyl sulfate
15	Potassium myristoyl hydrolyzed collagen	Sodium nonoxynol-6 phosphate
	Potassium oleoyl hydrolyzed collagen	Sodium octoxynol-2 ethane sulfonate
	Potassium palmitate	Sodium octyl sulfate
	Potassium undecylenoyl hydrolyzed collagen	Sodium oleoyl hydrolyzed collagen
20	PPG-2-isodeceth-4, -6, -9, -12	Sodium stearoyl hydrolyzed collagen
	PPG-6 C12-18 pareth-11	Sodium trideceth sulfate
	Protein hydrolysates	Sodium undecylenoyl hydrolyzed collagen
	Quaternium-80	Sodium/TEA-lauroyl hydrolyzed collagen
	Quillaja saponaria extract	Sodium/TEA-lauroyl hydrolyzed keratin
	Raffinose laurate, R. myristate, R. oleate	Sorbitan isostearate
25	Raffinose palmitate, R. stearate	Stearoyl sarcosine
	Ricinoleamidopropyl betain	Sulfated castor oil
	Silicone quaternium-1, -8, -9	TEA-cocoyl glutamate
	Sodium alpha olefin sulfonate	TEA-cocoyl hydrolyzed collagen
	Sodium cocoamphoacetate	TEA-cocoyl hydrolyzed soy protein
30	Sodium cocoyl hydrolyzed wheat protein	TEA-C12-15 alkyl sulfate
	Sodium cocoyl isethionate	TEA-hydrogenated tallow glutamate
	Sodium C12-13 sulfate	TEA-lauroyl glutamate
	Sodium C12-14 pareth-2 sulfate	TEA-lauroyl keratin amino acids
	Sodium C12-15 pareth-3 sulfonate	TEA-lauroyl sarcosinate
35	Sodium C12-15 pareth-7 carboxylate	TEA-lauryl sulfate
	Sodium C12-15 pareth-7 sulfonate	TEA-myristoyl hydrolyzed collagen
	Sodium C12-15 pareth-8 carboxylate	Tocophereth-5 -10 -18 -20 -30 -50 -70
	Sodium C12-15 pareth-15 sulfonate	Trideceth-7 carboxylic acid
	Sodium C12-18 alkyl sulfate	Trideceth-9
40	Sodium C13-17 alkane sulfonate	Trideceth-19-carboxylic acid
	Sodium C14-16 olefin sulfonate	Tridecyl ethoxylate
	Sodium cetearyl sulfate	Triethanolamine C10-14 sulfate
	Sodium cetyl oleyl sulfate	Trilauryl phosphate
	Sodium coco-tallow sulfate	Wheat germamidopropyl betaine
45	Sodium cocoyl glutamate	Yucca vera extract
	Sodium cocoyl hydrolyzed collagen	
	Sodium cocoyl hydrolyzed soy protein	
	Sodium cocoyl sarcosinate	
	Sodium dimethicone copolyol acetyl	
50	methyltaurate	
	Sodium hydrogenated tallow glutamate	
	Sodium isodecyl sulfate	
	Sodium laureth-5 carboxylate	

Suspending agent

Acrylates/ceteth-20 methacrylates copolymer  
 Acrylates/steareth-20 methacrylate copolymer  
 Algin  
 Bentonite  
 C10 polycarbamyl polyglycol ester  
 Calcium alginate



	Carbomer, C. 934	_____ /C10-C30 alkyl acrylate crosspolymer
	Carrageenan (Chondrus crispus)	_____ /ceteth-20 itaconate copolymer
	Cellulose gum	_____ /ceteth-20 methacrylates copolymer
	Cetyl hydroxyethylcellulose	_____ /steareth-20 itaconate copolymer
5	Dihydrogenated tallow phthalic acid amide	_____ /steareth-20 methacrylate copolymer
	Distearyl phthalic acid amide	_____ /steareth-50 acrylate copolymer
	Guar (Cyanopsis tetragonoloba) gum	_____ /vinyl isodecanoate crosspolymer
	Hectorite	_____ acid/acrylonitrogens copolymer
	Hydroxypropylcellulose	_____
10	Isobutylene/MA copolymer	_____ /magnesium hydroxide stearate
	Magnesium aluminum silicate	_____ acrylates/acrylonitrogens copolymer
	Methylcellulose	_____ alginate
	Pentasodium triphosphate	_____ alcohol
	Polyethylene, P. micronized	_____ acid
15	Propylene glycol alginate	_____ alcohol, B. behenate
	Quaternium-18 bentonite	_____ nite
	Quaternium-18 hectorite	_____ olycarbaryl polyglycol ester
	Sodium magnesium silicate	_____ 5 alcohols
	Sodium polynaphthalenesulfonate	_____ 6 alcohols
20	Stearalkonium bentonite, S. hectorite	_____ 6 acid
	Steareth-10 allyl ether/acrylates copolymer	Calcium alginate
	_____ (Astragalus gummifer) gum	Calcium carrageenan
	_____ ribehenin	Caprylic alcohol
	_____ rihydroxystearin	Carbomer
25	_____ omethamine magnesium aluminum silicate	Carboxymethyl hydroxyethylcellulose
	_____ anthan gum	Carrageenan (Chondrus crispus)
	<b>Sweetener</b>	Cellulose, C. gum
	_____ saccharin	Cetearyl alcohol, C. behenate
30	_____	Cetearyl octanoate, C. stearate
	_____ acid	Cetostearyl stearate
	_____ acid	Cetyl alcohol
	_____, ammoniated	Cetyl hydroxyethylcellulose
	_____ corn starch	Cetyl myristate, C. palmitate
35	_____	Cocamide
	_____	Cocamide MEA, C. MIPA
	_____	Cocamidopropylamine oxide
	_____	Coco-betaine
	_____	Coco-rapeseedate
	_____ saccharin	Coco/oleamidopropyl betaine
40	_____	Cocoyl amido hydroxy sulfo betaine
	_____	Cocoyl monoethanolamide ethoxylate
	_____	Colloidal silica sols
	_____ <b>accelerator</b>	DEA-hydrolyzed lecithin
	_____ tyrosine	DEA-linoleate
45	Carrot (Daucus carota) extract	DEA-oleth-3 phosphate
	_____ acetyl tyrosinate methylsilanol	DEA oleth-10 phosphate
	_____ droxyacetone	Decyl alcohol
	_____ maly tyrosinate	Dextran
	_____ alba extract in white emulsion	Dextrin
50	_____ tyrosinate	Dilaureth-10 phosphate
	_____ <b>ckener</b>	Dioleth-8 phosphate
	_____ -VA crosspolmer	DMHF
		Ethoxylated fatty alcohol

	Gellan gum	
	Glyceryl behenate, G. stearate	
	Glyceryl polymethacrylate	
	Guar (Cyanopsis tetragonoloba) gum	
5	Guar hydroxypropyltrimonium chloride	
	Hectorite	
	Hexyl alcohol	
	Hydrated silica	
	Hydrogenated rapeseed oil	
10	Hydrogenated starch hydrolysate	
	Hydrogenated talloweth-60 myristyl glycol	
	Hydrolyzed oat flour	
	Hydrolyzed transgenic collagen	
15	Hydroxyethylcellulose	
	Hydroxypropyl chitosan	PEG-6 beeswax
	Hydroxypropyl guar	PEG-7 hydrogenated castor oil
	Hydroxypropyl methylcellulose	PEG-8
	Hydroxypropylcellulose	PEG-8 dioleate, P. distearate
20	Isoceteth-10	PEG-8 stearate
	Isostearamide DEA	PEG-9M
	Isostearamidopropylamine oxide	PEG-12 beeswax
	Isostearoamphopropionate	PEG-18 glyceryl oleate/cocotate
	Jobba wax	PEG-23M
25	Karaya (Stericulia urens) gum	PEG-28 glyceryl tallowate
	L _____ DEA, L. MEA, L. MIPA	PEG-40 jojoba oil
	L _____ midopropyl betaine	PEG-45M
	Laureth-10	PEG-50 tallow amide
	L _____-linoleic DEA	PEG-55 propylene glycol oleate
30	L _____-linoleoyl diethanolamide	PEG-75 stearate
	L _____-myristoyl diethanolamide	PEG-90M
	L _____ alcohol, L. betaine	PEG-100 stearate
	L _____ amide DEA, L. MEA	PEG-120 methyl glucose dioleate
	L _____ eic acid	PEG-150 distearate
35	L _____ mic acid	PEG-150 pentaerythrityl tetrastearate
	L _____ bean (Ceratonlia siliqua) gum	PEG-160M
	Magnesium aluminum silicate	PEG-200 glyceryl stearate
	MDM hydantoin	PEG-200 glyceryl tallowate
	Methylcellulose	Pentaerythrityl tetrabenenate
40	Montmorillonite	Pentaerythrityl tetrastearate
	Myristamide DEA, M. MEA	Poloxamer 105, 124, 185, 237, 238, 338, 407
	Myristamine oxide	Polyacrylic acid
	Myristyl alcohol	Polysorbate 20
	Octacosanyl stearate	Potassium alginate, P. chloride
45	Oleamide, O. DEA, O. MEA	Potassium oleate, P. stearate
	Palmitamide MEA	PPG-5-ceteth-10 phosphate
	Pectin	Propylene glycol stearate
	PEG-2 laurate	PVM/MA decadiene crosspolymer
	PEG-3 distearate, P. lauramide	PVP
50	PEG-3 lauramine oxide	Quaternium-18 bentonite
	PEG-4 diisostearate, P. oleamide	Quaternium-18 hectorite
	PEG-5M	Rapeseed oil, ethoxylated high erucic acid

- Ricinoleamide MEA  
 Sesamide DEA  
 Sodium acrylates/vinyl isodecanoate crosspolymer  
 Sodium carbomer, S. carrageenan  
 5 Sodium ceteth-13-carboxylate  
 Sodium chloride  
 Sodium magnesium silicate, S. stearate  
 Sorbitan sesquiosostearate, S. tristearate  
 Soyamide DEA  
 10 Soyamidopropyl betaine  
 Starch polyacrylonitrile copolymer-potassium salt  
 Starch polyacrylonitrile copolymer-sodium salt  
 Stearalkonium bentonite, S. hectorite  
 Stearamide  
 15 Stearamide DEA, S. MEA, S. MEA-stearate  
 Stearamidopropyl dimethylamine lactate  
 Stearamine oxide  
 Steareth-10 allyl ether/acrylates copolymer  
 Stearic acid  
 20 Stearyl alcohol  
 Synthetic beeswax  
 Tallowamide MEA  
 TEA-acrylates/acrylonitrogens copolymer  
 Tragacanth (*Astragalus gummifer*) gum  
 25 Tribehenin  
 Trihydroxystearin  
 Tromethamine magnesium aluminum silicate  
 Wheat germamide DEA  
 Wheat germamidopropyl betain  
 30 Xanthan gum

**Thixotrope**

- Bentonite  
 Hectorite  
 35 Sodium magnesium silicate  
 Stearalkonium bentonite

**Toner**

- Althea officinalis extract  
 40 Clover (*Trifolium pratense*) extract  
 Dog rose (*Rosa canina*) hips extract  
 Ginseng (*Panax ginseng*) extract  
 Horsetail extract  
 Lemon bioflavonoids extract  
 45 Meadowsweet (*Spiraea ulmaria*) extract  
 Nettle (*Urtica dioica*) extract  
 Rose (*Rosa multiflora*) extract  
 Rosemary (*Rosmarinus officinalis*) extract

**UVA absorber**

- 50 Benzophenone-1, -2, -3, -4, -6, -8, -9, -11, -12  
 Butyl methoxydibenzoylmethane  
 Corallina officinalis

Isopropyl dibenzoylmethane  
 Menthyl anthranilate  
 2,2',4,4'-Tetrahydroxybenzophenone  
 Titanium dioxide  
 Zinc oxide

**UVB absorber**

Argania spinosa oil  
 Benzophenone-1 -2 -3 -4 -6 -9 -11  
 Corallina officinalis  
 DEA-methoxycinnamate  
 Drometrizole  
 Ethyl dihydroxypropyl PABA  
 Etocrylene  
 homosalate  
 Isoamyl p-methoxycinnamate  
 Isopropyl methoxycinnamate  
 Isopropylbenzyl salicylate  
 4-Methylbenzylidene camphor  
 Octocrylene  
 Octrizole  
 Octyl dimethyl PABA  
 Octyl methoxycinnamate  
 Octyl salicylate, O. triazne  
 PABA  
 PEG-25 PABA  
 Phenylbenzimidazole sulfonic acid  
 Shea butter, ethoxylated  
 TEA-salicylate  
 Titanium dioxide  
 TriPABA panthenol  
 Zinc oxide

**Vegetable oil**

Apricot (*Prunus armeniaca*) kernel oil  
 Avocado (*Persea gratissima*) oil  
 Baobab oil  
 Calendula officinalis oil  
 Chaulmoogra (*Taraktogenos kurzii*) oil  
 Coconut (*Cocos nucifera*) oil  
 Corn (*Zea mays*) oil  
 Cottonseed (*Gossypium*) oil  
 Gold of pleasure oil  
 Grape (*Vitis vinifera*) seed oil  
 Hazel (*Corylus avellana*) nut oil  
 Hybrid sunflower (*Helianthus annuus*) oil  
 Hydrogenated coconut oil  
 Hydrogenated cottonseed oil  
 Hydrogenated vegetable oil  
 Jojoba (*Buxus chinensis*) oil  
 Kukui (*Aleurites molaccana*) nut oil  
 Macadamia ternifolia nut oil  
 Meadowfoam (*Limnanthes alba*) seed oil

- Mexican poppy oil  
 Palm (*Elaeis guineensis*) kernel oil  
 Partially hydrogenated soybean oil  
 Peach (*Prunus persica*) kernel oil  
 5 Peanut (*Arachis hypogaea*) oil  
 Pecan (*Carya illinoensis*) oil  
 Pumpkin (*Cucurbita pepo*) seed oil  
 Quinoa (*Chenopodium quinoa*) oil  
 Rapeseed (*Brassica capestris*) oil  
 10 Rice (*Oryza sativa*) bran oil  
 Safflower (*Carthamus tinctorius*) oil  
 Seabuckthorn oil  
 Sesame (*Sesamum indicum*) oil  
 Sisymbrium irio oil  
 15 Soybean (*Glycine soja*) oil  
 Sunflower (*Helianthus annuus*) seed oil  
 Walnut (*Juglans regia*) oil  
 Wheat (*Triticum vulgare*) germ oil  
 Wild borage oil  
 20

**Vitamin**

- Aesculus chinensis extract  
 Ascorbic acid  
 Ascorbic acid polypeptide  
 25 Ascorbyl palmitate  
 Biotin  
 Calcium pantothenate  
 Cholecalciferol  
 Cyanocobalamin  
 30 Eclipta alba extract  
 Emblica officinalis extract  
 Equisetum arvense extract  
 Ergocalciferol  
 Esculin  
 35 Ethyl linoleate  
 Folic acid  
 Laminaria japonica extract  
 Marsilea minuta extract  
 Melaleuca bracteata extract  
 40 Menadione  
 Nasturtium sinensis extract  
 Nelumbium speciosum extract  
 Niacin  
 Niacinamide, N. ascorbate  
 45 Nicotinamide  
 Nicotinic acid  
 Ocimum basilicum extract  
 Panthenyl triacetate  
 Pantothenic acid  
 50 Phytonadione  
 Pyridoxine HCl  
 Retinol  
 Retinyl acetate, R. palmitate

Retinyl palmitate polypeptide  
 Retinyl propionate  
 Riboflavin tetraacetate  
 Sodium ascorbate  
 Thiamine HCL  
 Tocopherol  
 Tocopheryl acetate, T. succinate

**Wax**

Bayberry (*Myrica cerifera*) wax  
 Behenoxy dimethicone  
 C16-18 alkyl methicone  
 Candelilla (*Euphorbia cerifera*) wax  
 Carnauba (*Copernicia cerifera*) wax  
 Ceresin  
 Cetyl dimethicone, C. isooctanoate  
 Dialkyldimethylpolysiloxane  
 Dimethiconol hydroxystearate  
 Dimethiconol stearate  
 Hydrogenated castor oil  
 Hydrogenated cottonseed oil  
 Hydrogenated jojoba oil, H.j. wax  
 Hydrogenated palm kernel oil  
 Hydrogenated rapeseed oil  
 Hydrogenated rice bran wax  
 hydrogenated vegetable oil  
 Isooctadecyl isononanoate  
 Japan (*Rhus succedanea*) wax  
 Jojoba esters  
 Montan (Montan cera) wax  
 Ouricury wax  
 Ozokerite  
 Polyglyceryl-3 beeswax  
 Spermaceti  
 Stearoxymethicone/dimethicone copolymer  
 Stearoxytrimethylsilane  
 Synthetic candelilla wax  
 Synthetic carnauba

**Wetting agent**

Benzalkonium chloride  
 Benzethonium chloride  
 Cetalkonium chloride  
 Cetareth-20  
 Ceteth-20  
 Cetyl pyridinium chloride  
 Cocoamphodipropionic acid  
 Decaglycerol monodioleate  
 Deceth-9  
 Dihydroabietyl methacrylate  
 Dimethicone copolyol methyl ether  
 Dimethicone copolyol phthalate  
 Dioctyl sodium sulfosuccinate

- Ethyl hydroxymethyl oleyl oxazoline
- Hydroxylated milk glycerides
- Isolaureth-6
- Lanolin acid
- 5 Lauryl pyrrolidone
- Lecithin
- Methyl hydrogenated rosinat
- Methyl rosinat
- Nonyl nonoxynol-5
- 10 Octoxynol-8, 70
- Oleth-15
- Oleth-20 phosphate
- PEG-9 castor oil
- PEG-15 castor oil
- 15 PEG-20 glyceryl stearate
- PEG-20 sorbitan triisostearate
- PEG-45 palm kernel glycerides
- PEG-60 almond glycerides, P.corn glycerides
- PEG-60 shea butter glycerides
- 20 PEG-70 mango glycerides
- PEG-75 shorea butter glycerides
- PEG-80 sorbitan laurate
- Poloxamer 123, 181, 182, 184, 235, 334
- Polyether trisiloxane
- 25 Polyglyceryl-3 oleate
- Polyglyceryl-6 dioleate
- Polyglyceryl-10 tetraoleate
- Polysorbate 60, 80
- PPG-2-isodeceth-4, -6, -9, -12
- 30 PPG-10 lanolin alcohol ether
- Propylene glycol
- Sodium butoxyethoxy acetate
- Sodium capryloamphohydroxypropylsulfonate
- Sodium decyl diphenyl ether sulfonate
- 35 Sodium dodecyldiphenyl ether sulfonate
- Sodium lauryl sulfate
- Sulfated castor oil
- Triisocetyl citrate
- Triisostearin PEG-6 esters
- 40 Yucca vera extract

Claims:

1. A cosmetic composition comprising:  
a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component randomly bonded to at least one poly(acrylic acid) component said polymer network capable of aggregation in response to a change in temperature; and  
a cosmetically active agent which imparts a preselected cosmetic effect, said carrier and said agent disposed within an aqueous-based medium.
2. A cosmetic composition for topical application, comprising:  
a cosmetically acceptable carrier, comprising a reverse thermal viscosifying polymer network comprising at least one poloxamer component capable of aggregation in response to a change in temperature randomly bonded to at least one poly(acrylic acid) component; and  
a cosmetically active agent selected to treat imperfections or disorders of the skin, said carrier and said agent disposed within an aqueous-based medium.
3. The cosmetic composition of claim 1, wherein the cosmetic composition is a shampoo and the cosmetically active agent comprises a cleansing surfactant.
4. The cosmetic composition of claim 1, wherein the cosmetic composition is a moisturizer and the cosmetically active agent comprises a moisturizer.
5. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunscreen and the cosmetically active agent comprises a UV-absorbing agent.
6. The cosmetic composition of claim 1, wherein the cosmetic composition is an acne cream and the cosmetically active agent comprises an antiacne agent.

7. The cosmetic composition of claim 1, wherein the cosmetic composition is a hair straightener and the cosmetic agent comprises a base for increasing the pH.

8. The cosmetic composition of claim 1, wherein the cosmetic composition is a sunless tanning lotion and the cosmetically active agent comprises skin tinting agent.

9. The cosmetic composition of claim 1, wherein the cosmetic composition is an antiperspirant and the cosmetically active agent comprises aluminum chlorhydrate.

10. The cosmetic composition of claim 1, wherein the cosmetic composition is a shaving cream and the cosmetically active agent comprises an emollient and a foaming surfactant.

11. The cosmetic composition of claim 1, wherein the cosmetic composition is a face cosmetic and the cosmetically active agent comprises a pigment.

12. The cosmetic composition of claim 1 or 2, wherein the cosmetic agent comprises a hydrophobic material, wherein the cosmetically acceptable carrier stabilizes the hydrophobic material in the aqueous medium.

13. The cosmetic composition of claim 2, wherein said cosmetic agent selected to treat imperfections or disorders of the skin is selected from the group consisting of acidulents, antiacne agents, anti-aging agents, anti-inflammatories, anti-irritants, antioxidants, depilatories, detergents, disinfectants, emollients, exfoliants, humectants, lubricants, moisturizers, skin conditioners, skin protectants, skin lightening agents, skin soothing agents, suncreening agents, and tanning accelerators and mixtures thereof.

14. The composition of claim 4, wherein said composition further comprises a cosmetic agent selected from the group consisting of humectants and emollients.

15. The composition of claim 1 or 2, further comprising one or more  
5 additives selected from the group consisting of preservatives, abrasives, acidulents, antiacne agents, anti-aging agents, antibacterials, anticaking, anticaries agents, anticellulites, antidandruff, antifungal, anti-inflammatories, anti-irritants, antimicrobials, antioxidants, astringents, antiperspirants, antiseptics, antistatic agents, binders, buffers, additional carriers, chelators, cell stimulants, cleansing agents,  
10 conditioners, deodorants, depilatories, detergents, dispersants, emollients, emulsifiers, enzymes, essential oils, exfoliants, fibers, film forming agents, fixatives, foaming agents, foam stabilizers, foam boosters, fungicides, gellants, glosser, hair conditioner, hair set resins, hair sheen agents, hair waving agents, humectants, lubricants, moisture barrier agents, moisturizers, ointment bases, opacifier, plasticizer, polish, polymers,  
15 powders, propellant, protein, refatting agents, sequestrant, silicones, skin calming agents, skin cleansers, skin conditioners, skin healing, skin lightening agents, skin protectants, skin smoothing agents, skin softening agents, skin soothing agents, stabilizers, sunscreen agents, surfactants, suspending agents, tanning accelerators, thickeners, vitamins, waxes, wetting agents, liquefiers, colors, flavors and/or  
20 fragrances.

16. The composition of claim 1, wherein the cosmetic composition takes a form selected from the group consisting of lotions, creams, sticks, roll-on formulations, mousses, sprays, aerosols, pad-applied formulations and masks.

25

17. The composition of claim 1, wherein the viscosification occurs at a temperature in the range of about 27-40°C.

18. The composition of claim 1, wherein the viscosification occurs at a  
30 temperature in the range of about 30 to 37°C.



19. The composition of claim 1, wherein said composition is formulated as a product selected from the group consisting of baby products, baby shampoos, lotions, powders and creams; bath preparations, bath oils, tablets and salts, bubble baths, bath fragrances, bath capsules; eye makeup preparations, eyebrow pencil, eyeliner, eye shadow, eye lotion, eye makeup remover, mascara; fragrance preparations, colognes, toilet waters, powders and sachets; noncoloring hair preparations, hair conditioner, hair spray, hair straighteners, permanent waves, rinses, shampoos, tonics, dressings and other grooming aids; color cosmetics; hair coloring preparations, hair dye, hair tints, hair color sprays, hair lighteners and hair bleaches; makeup preparations, face powders, foundations, leg and body paints, lipstick; makeup bases, rouges and makeup fixatives; manicuring preparations, basecoats, undercoats, cuticle softeners, nail creams, nail extenders, nail polish and enamel, and remover, oral hygiene products, dentrifices, mouthwashes; personal cleanliness, bath soaps, detergents, deodorants, douches and feminine hygiene products; shaving preparations, aftershave lotion, beard softeners, men's talcum shaving cream, shaving soap, preshave lotions; skin care preparations, skin cleansing preparations, skin antiseptics, depilatories, face and neck cleansers, body and hand cleansers, foot powders; moisturizers, night preparations, paste masks, skin fresheners; and suntan preparations, suntan creams, gels and lotions, and indoor tanning preparations.

20

20. The cosmetic composition of claim 1 or 2, wherein the poloxamer component is present in an amount in the range of about 0.01 to 20 wt% and the poly(acrylic acid) component is present in the amount of about 0.01 to 20 wt%.

25

21. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamers.

30

22. The cosmetic composition of claim 1, wherein the polymer network comprises a plurality of poloxamer components randomly bonded to a poly(acrylic acid) backbone.

23. The cosmetic composition of claim 1, wherein the reversibly viscosifying polymer composition comprises a plurality of poly(acrylic acid) components randomly bonded to a poloxamer component.

5        24. The cosmetic composition of claim 1, wherein the aqueous-based medium is selected from the group consisting of water, salt solutions and water with water-miscible organic compound(s).

10       25. The cosmetic compositions of claim 1, further comprising an additive selected to increase transition temperature and increase viscosity of the reversible viscosifying polymer network.

15       26. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature and decrease viscosity of the reversible viscosifying polymer network.

20       27. The cosmetic composition of claim 1, further comprising an additive selected to increase transition temperature without affecting viscosity of the reversible viscosifying polymer network.

25       28. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and increase viscosity of the reversible viscosifying polymer network.

25       29. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature and decrease viscosity of the reversible viscosifying polymer network.

30. The cosmetic composition of claim 1, further comprising an additive selected to decrease transition temperature without affecting viscosity of the reversibly viscosifying polymer network.

5 31. The cosmetic composition of claim 1, further comprising an additive selected to increase viscosity without affecting transition temperature of the reversibly viscosifying polymer network.

10 32. The cosmetic composition of claim 1, further comprising an additive selected to decrease viscosity without affecting transition temperature of the reversibly viscosifying polymer network.

15 33. The cosmetic composition of claim 1 or 2, characterized in that the gel remains translucent to light before and after response to the environmental stimulus.

34. The cosmetic composition of claim 1, wherein the poly(acrylic acid) is branched.

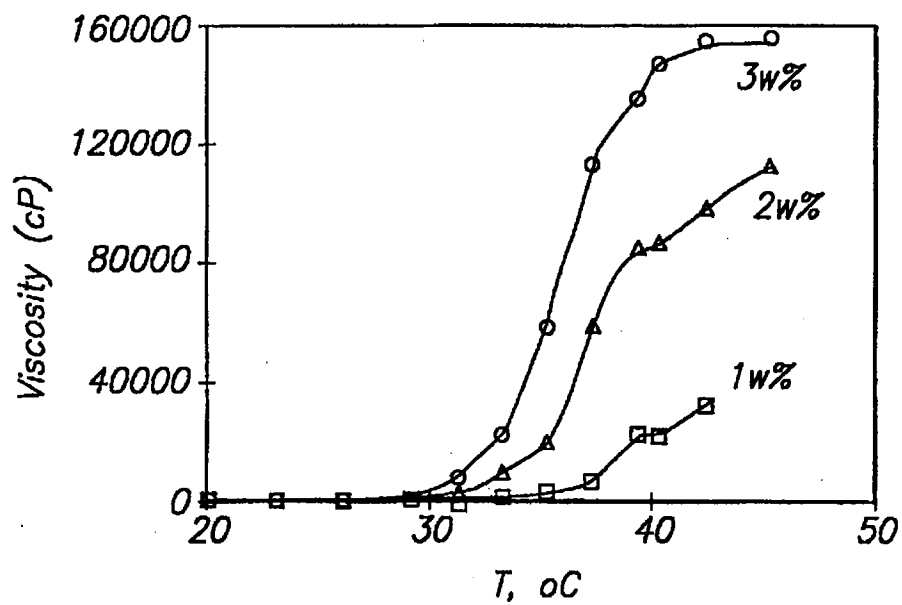
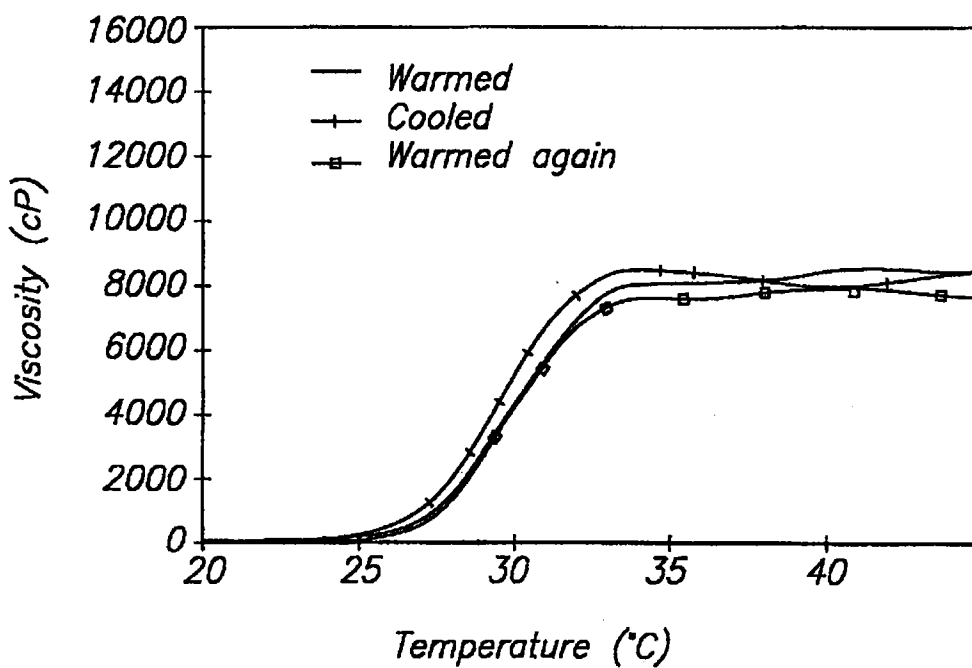
20 35. Method of making a cosmetic composition, comprising:  
dissolving a poloxamer capable of aggregation in response to a change in temperature in acrylic acid monomer;  
initiating polymerization of the monomer to form a poly(acrylic acid) randomly bonded to the poloxamer, so as to form a reversibly viscosifying polymer composition;  
mixing the reversibly gelling polymer compositions with a cosmetic agent which  
25 imparts a desired cosmetic effect to the composition.

36. The method of claim 36, wherein a polymerization initiator is selected to provide the polymer network having a selected temperature of viscosification.

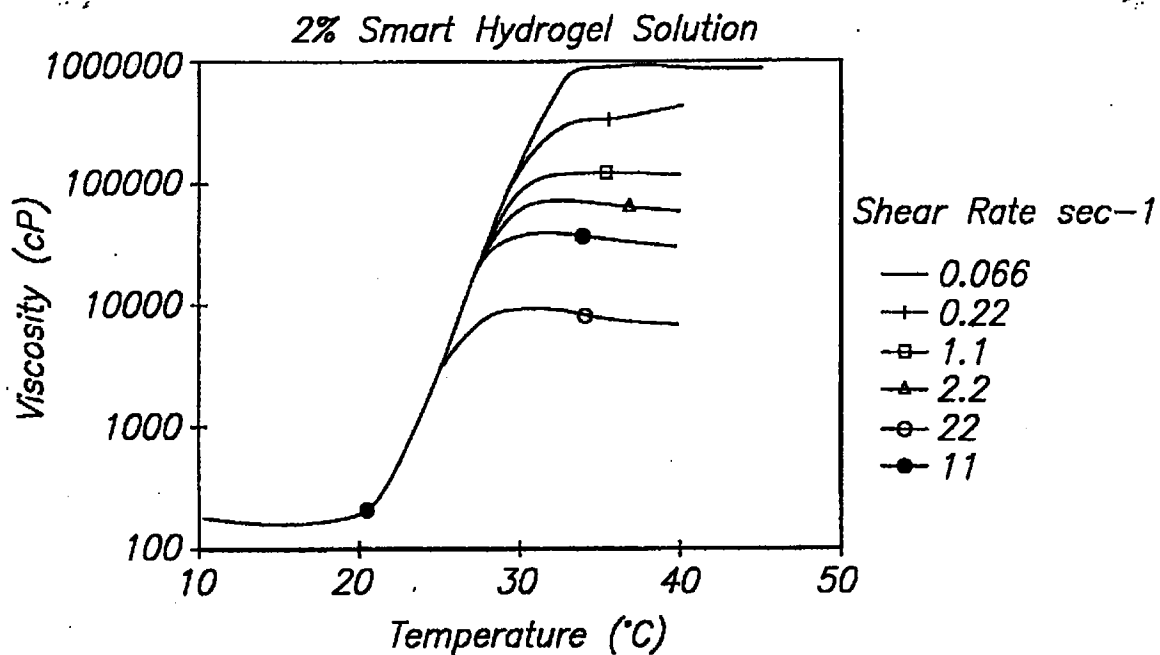
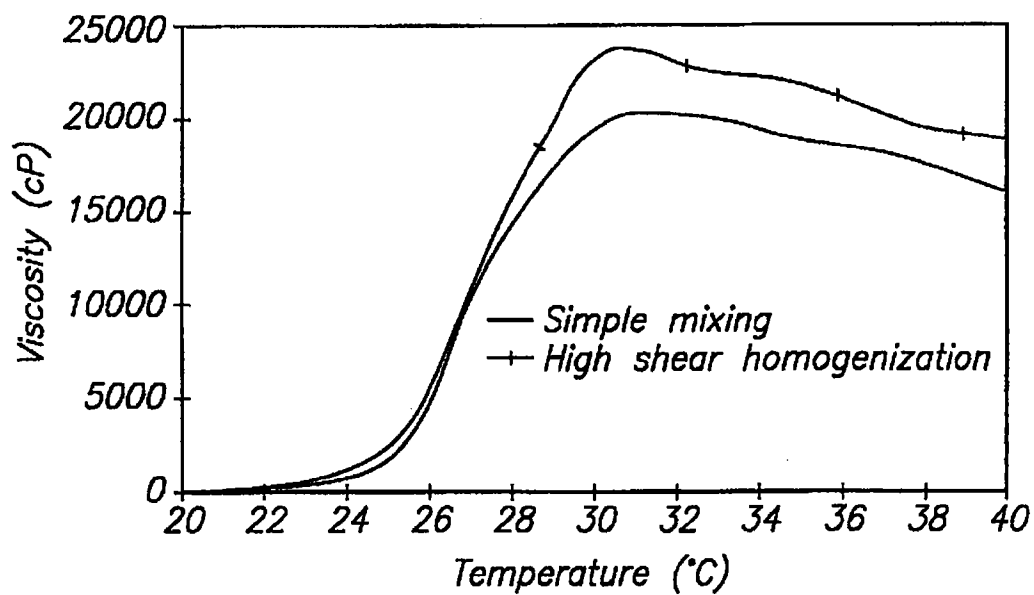
30 37. The method of claim 36, wherein one or more poloxamers are added.

38. The cosmetic composition of claim 1, wherein the reversibly viscösifying polymer network is present in an amount in the range of 0.01% - 10%.

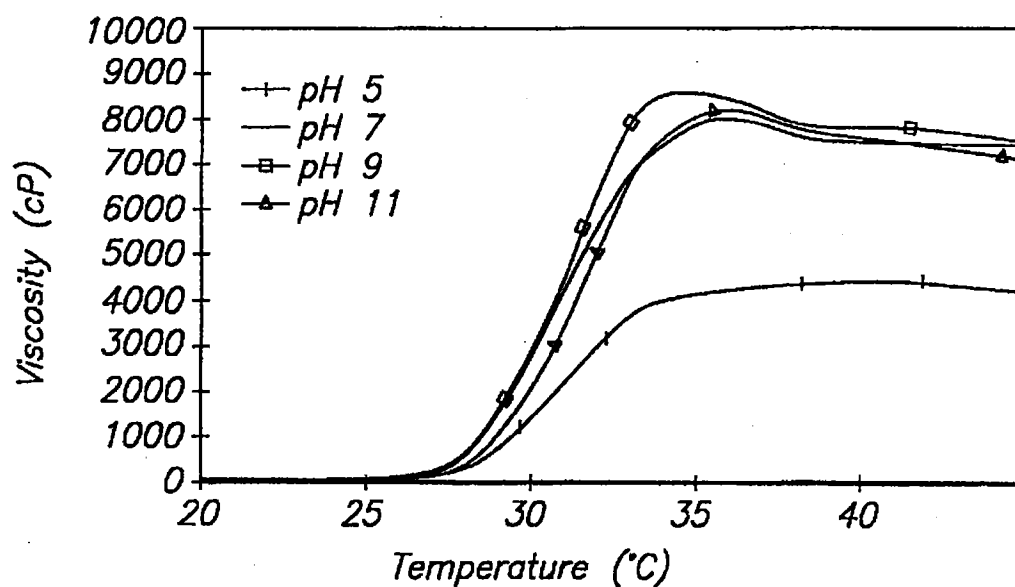
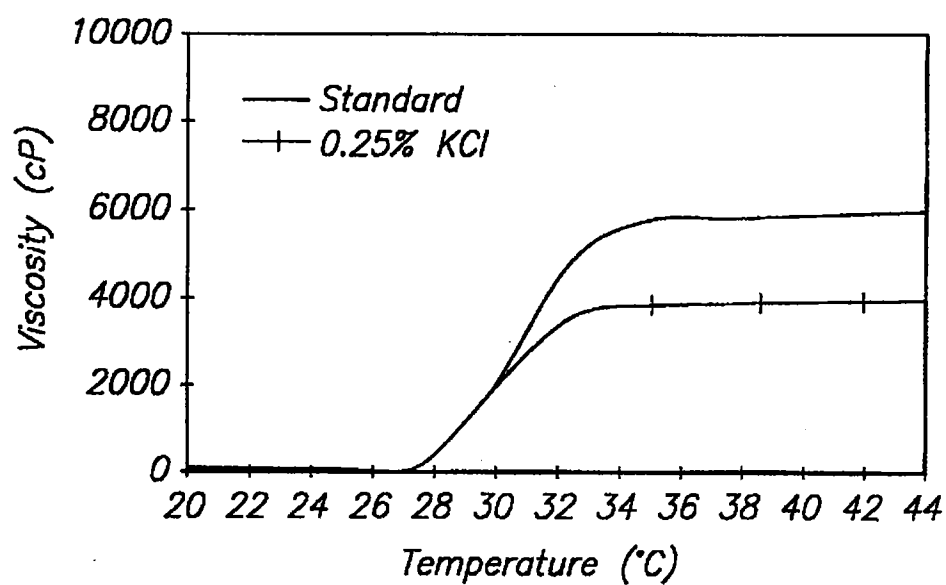
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**FIG. 1****FIG. 2**

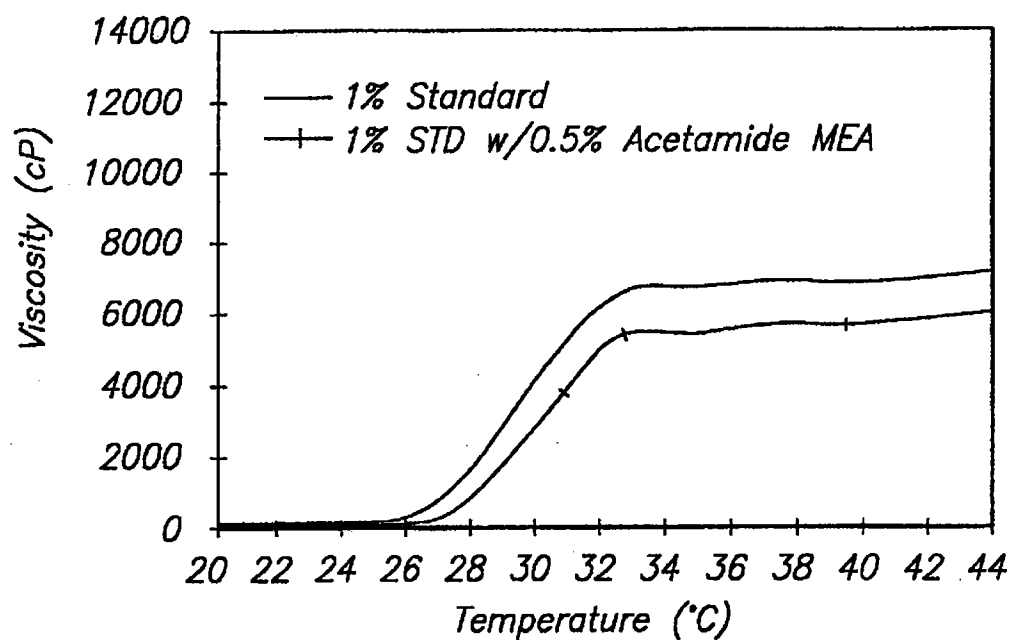
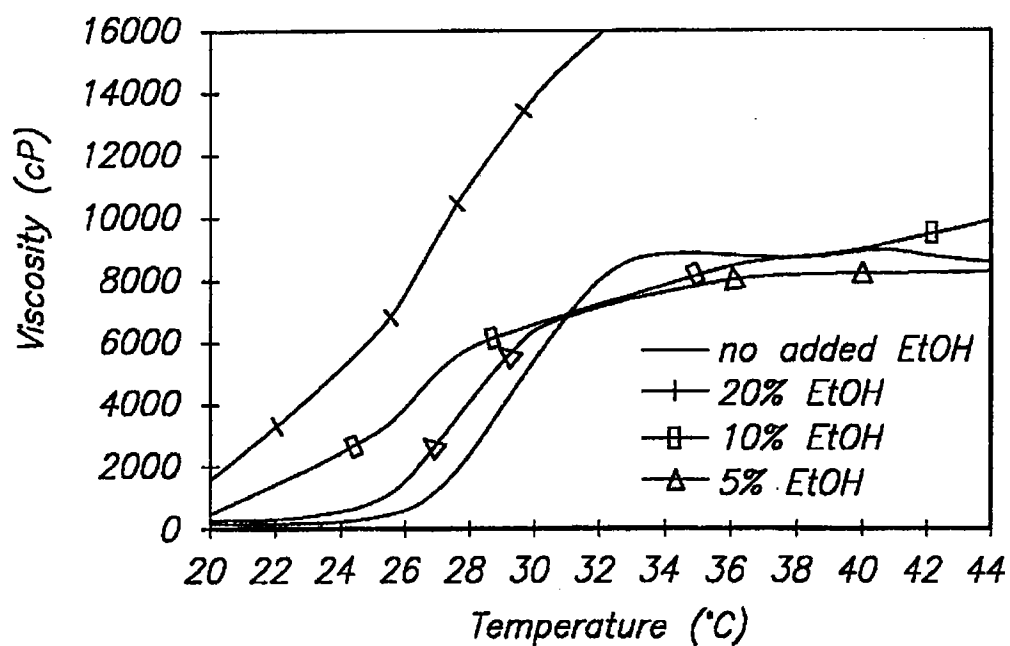
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**FIG. 3****FIG. 4**

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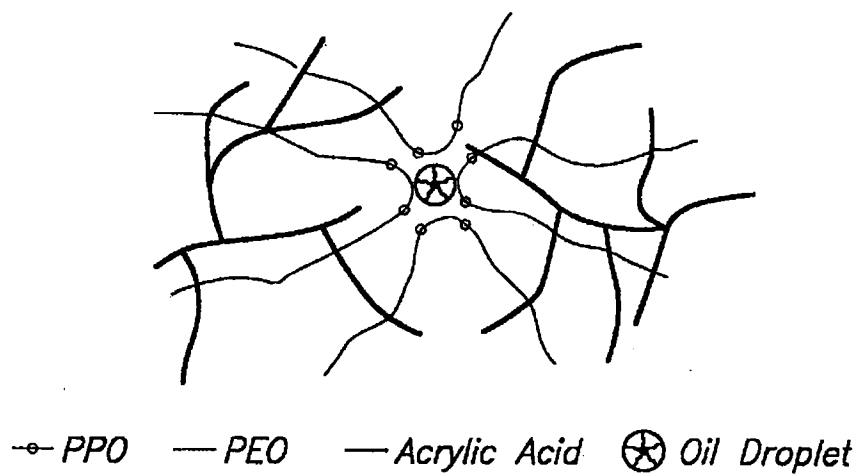
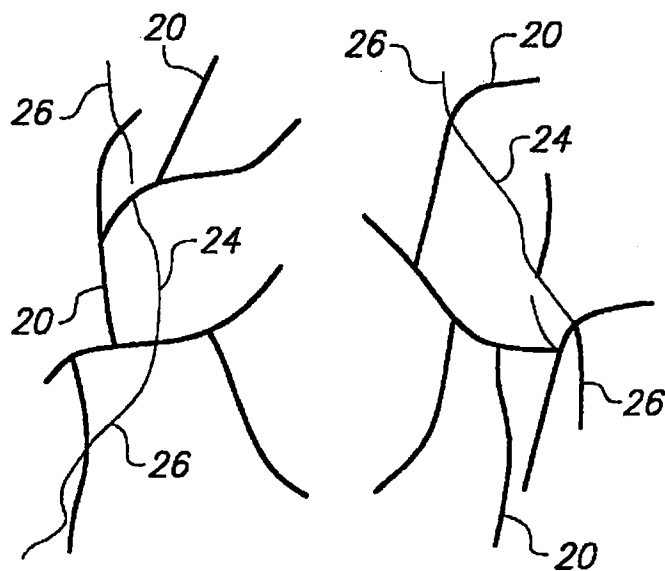
**FIG. 5****FIG. 6**

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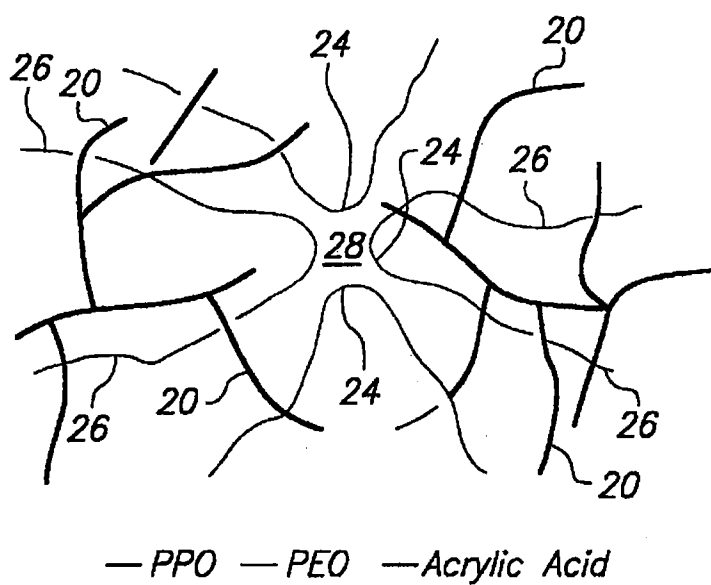
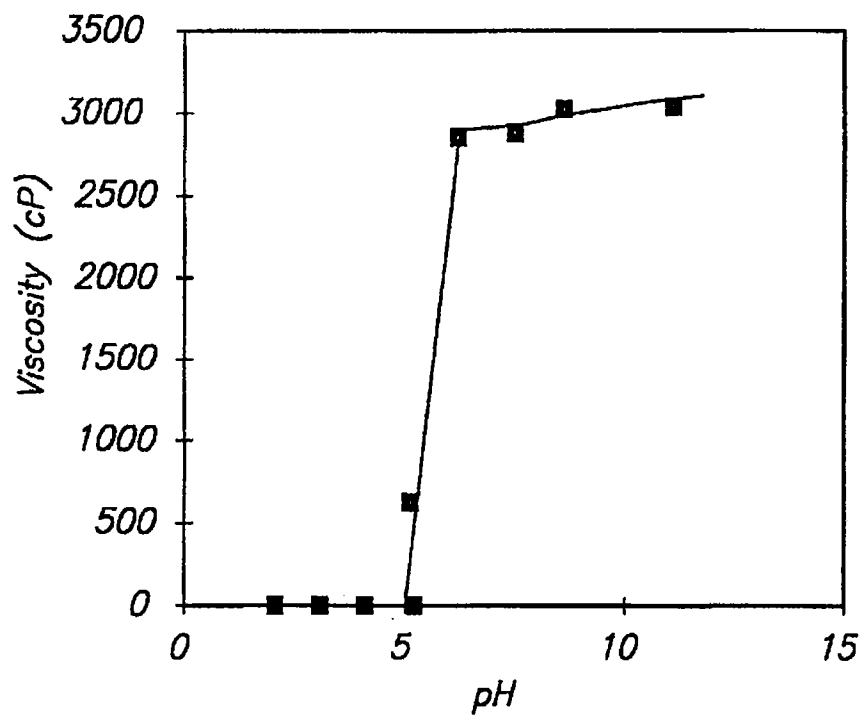
**FIG. 7****FIG. 8**



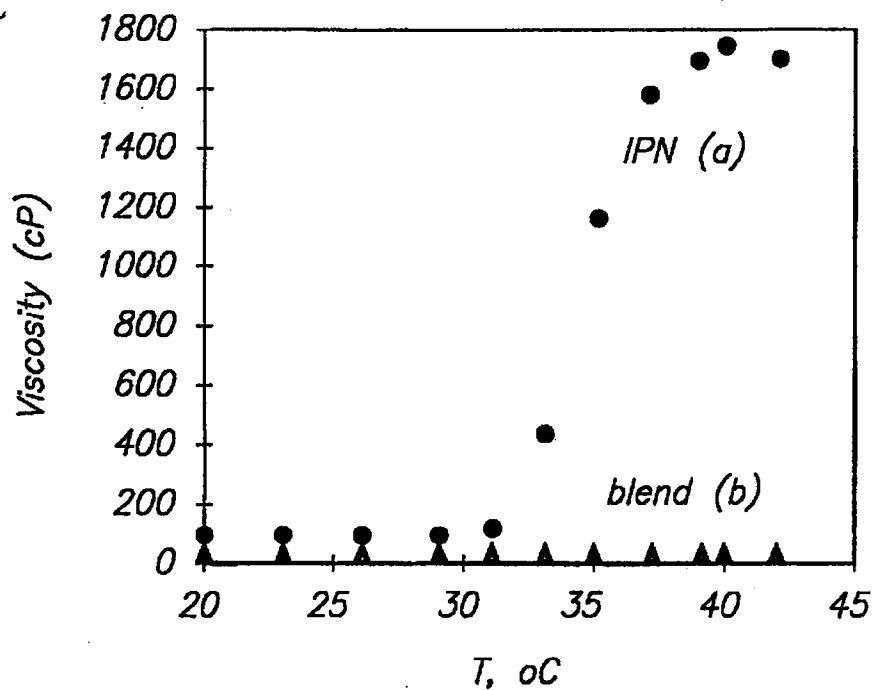
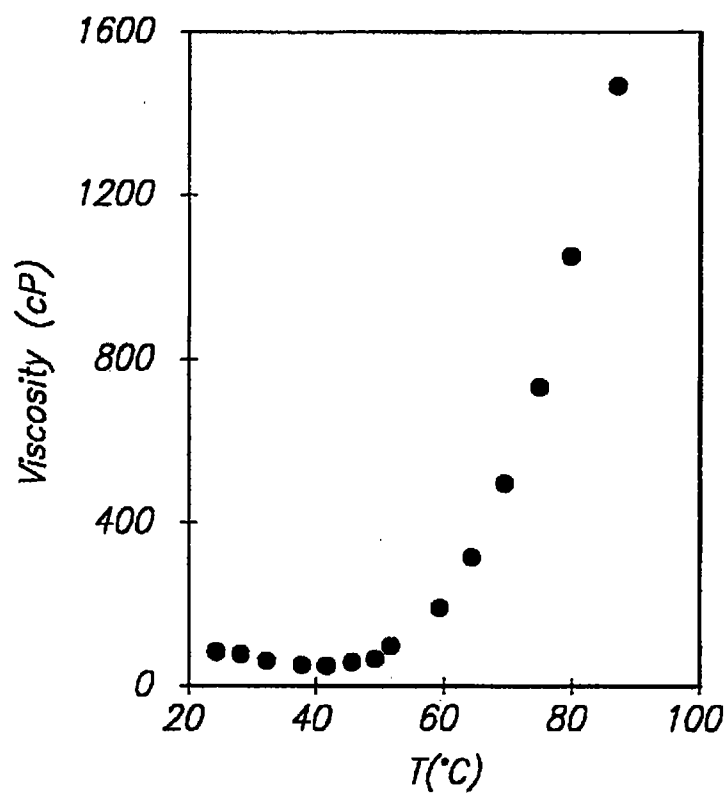
5/17

**FIG. 9****FIG. 10A**

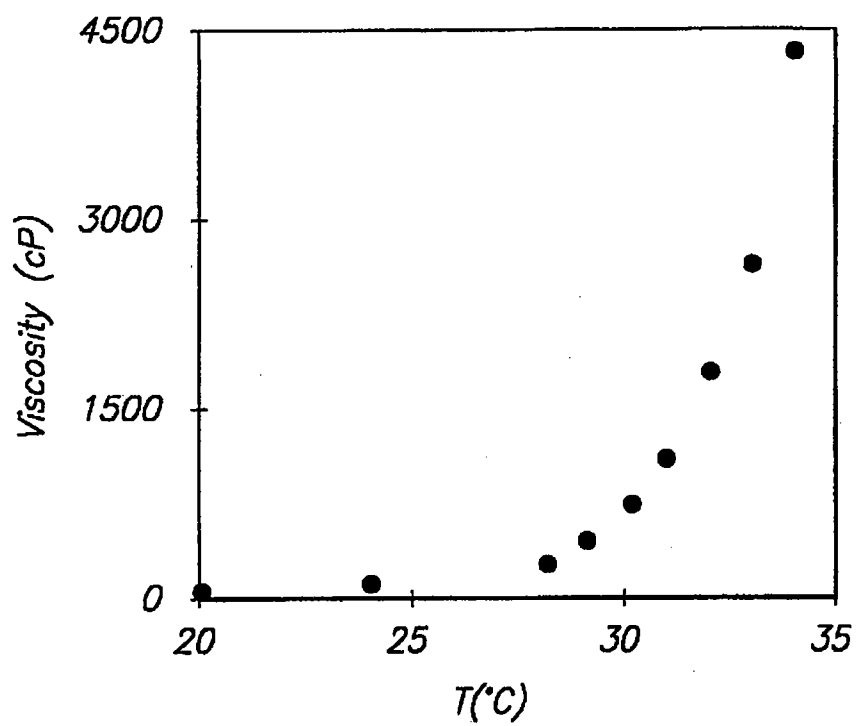
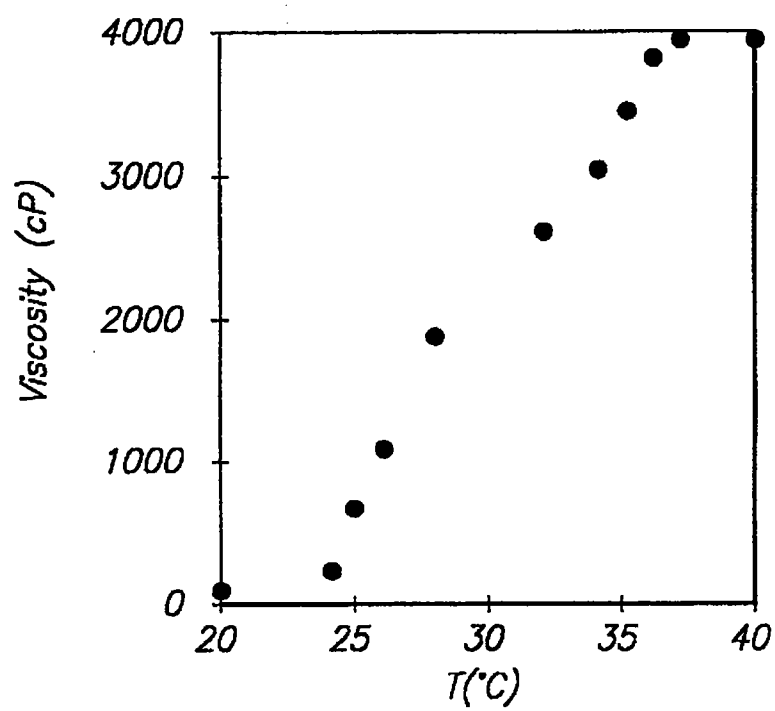
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**FIG. 10B****FIG. 11**

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**FIG. 12****FIG. 13**

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**FIG. 14****FIG. 15**

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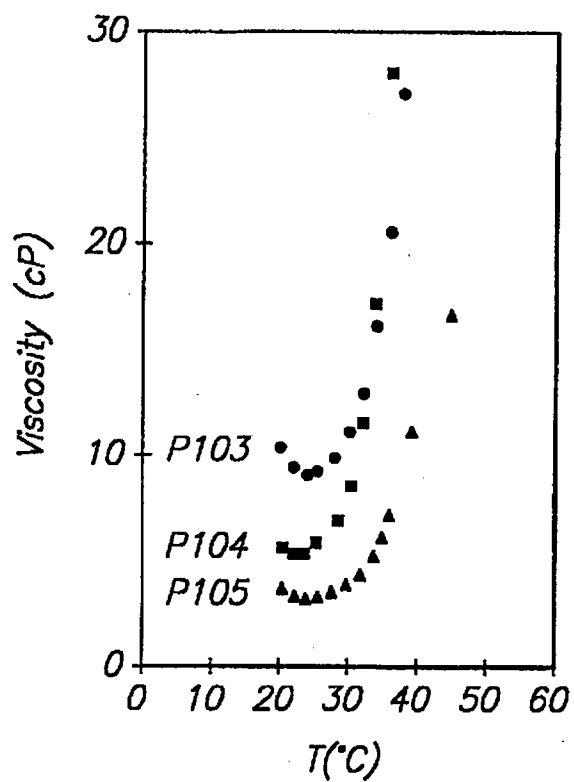


FIG. 16

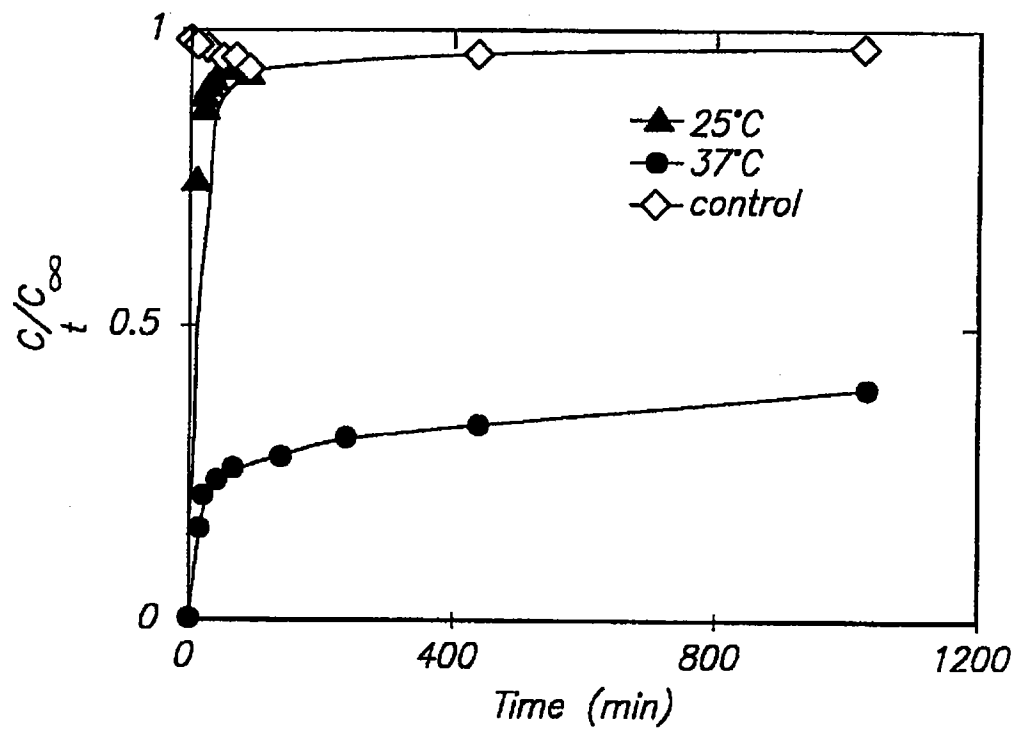
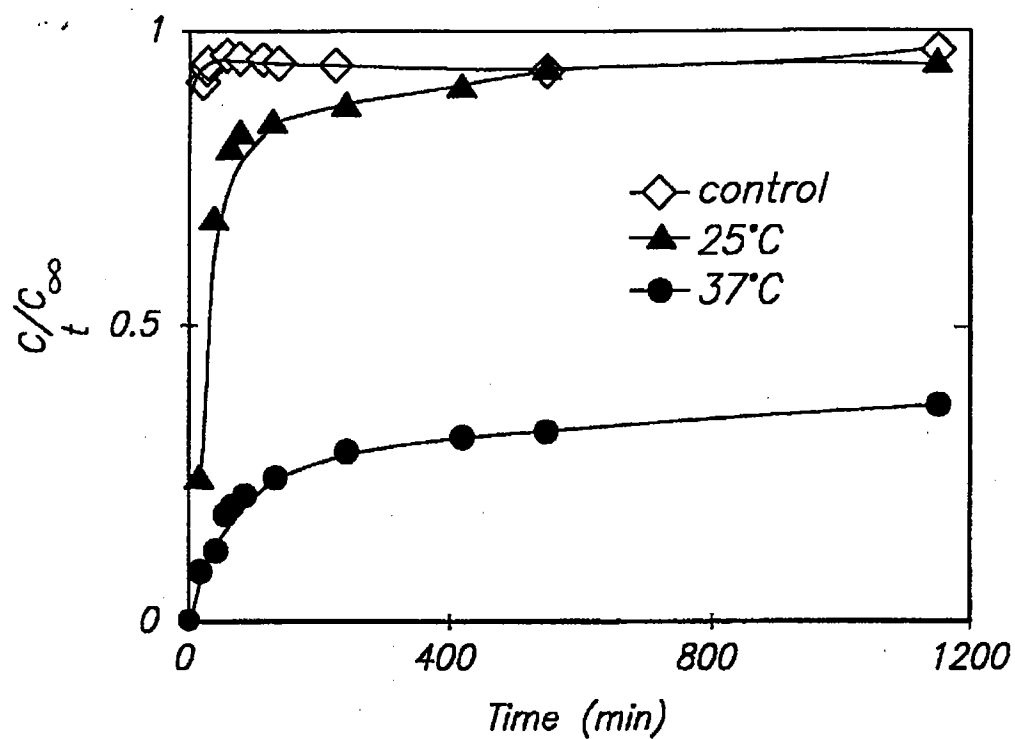
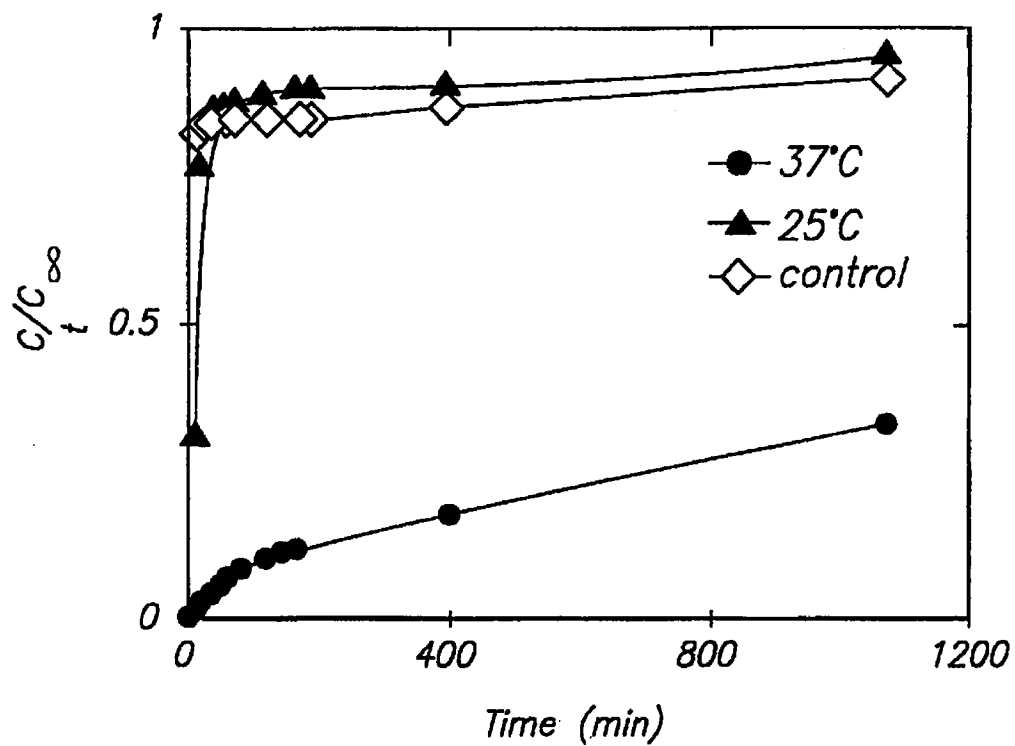


FIG. 17

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**FIG. 18****FIG. 19**

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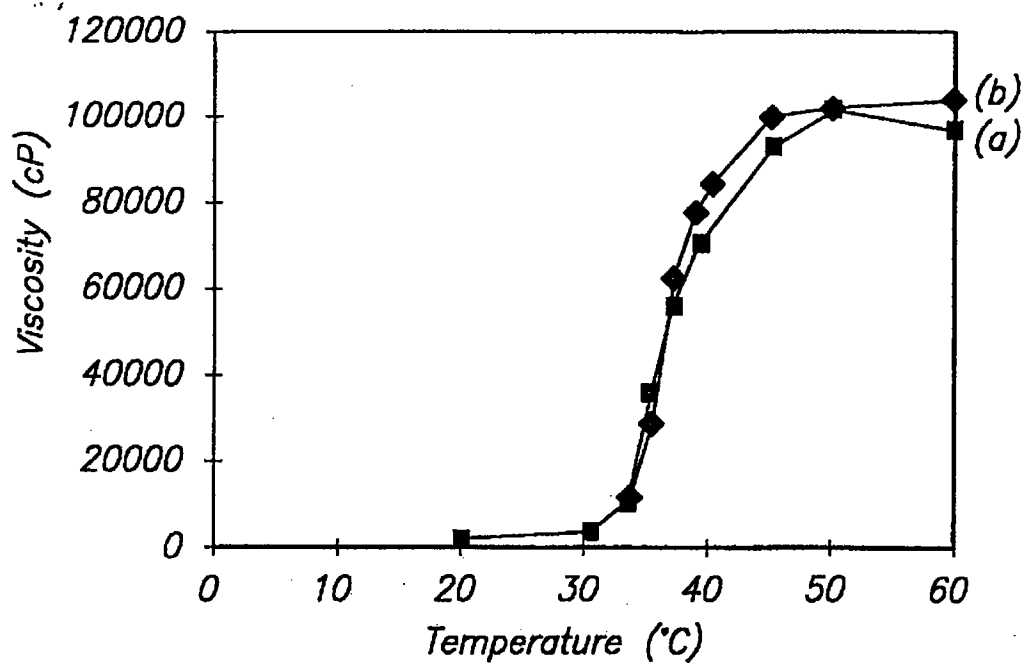


FIG. 20

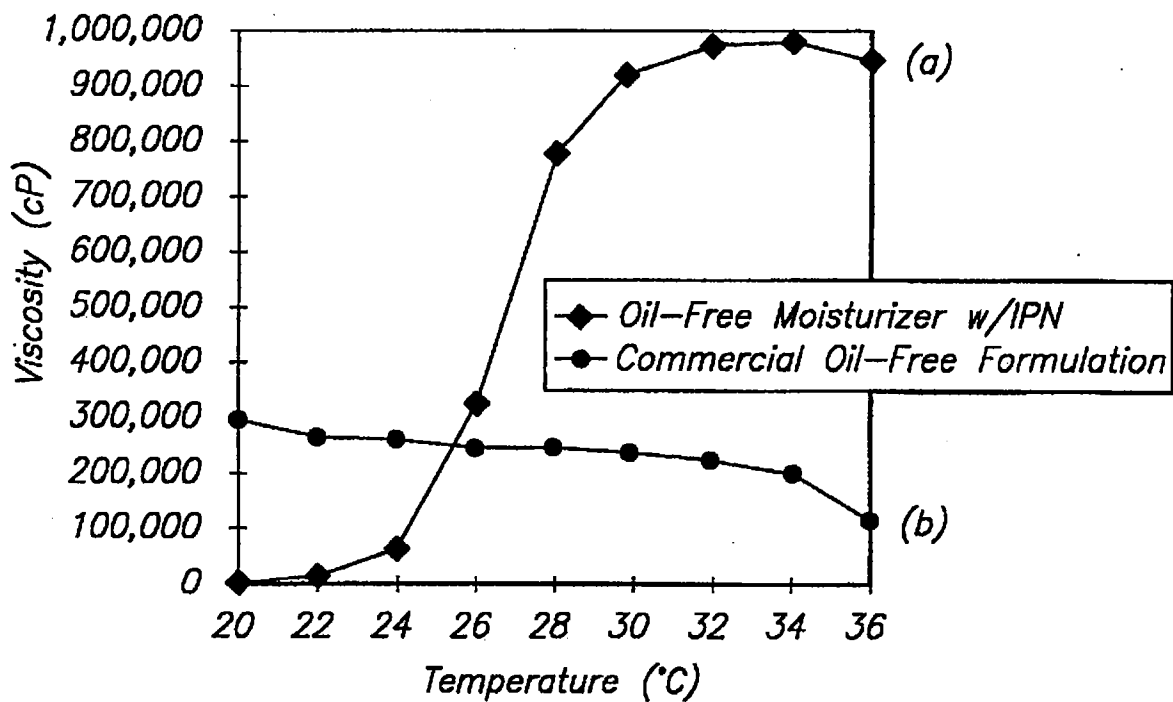


FIG. 21

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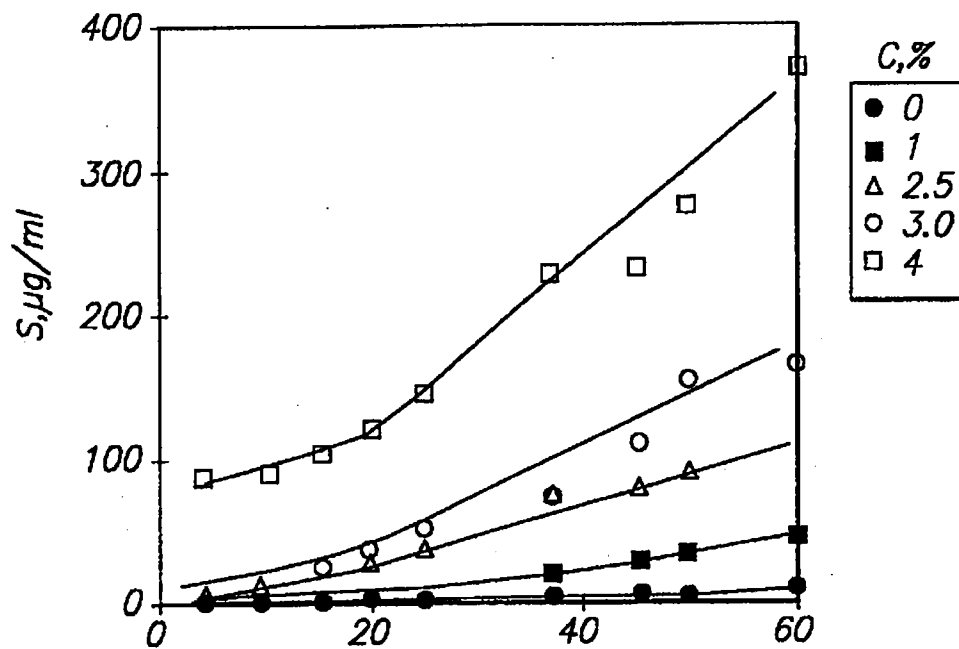


FIG. 22A

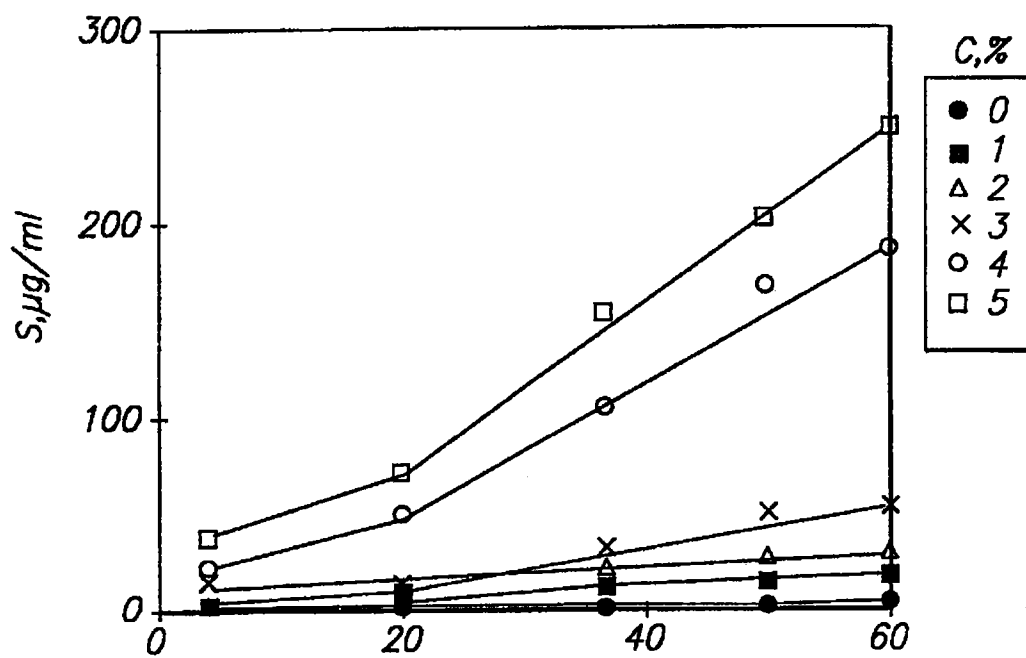


FIG. 22B



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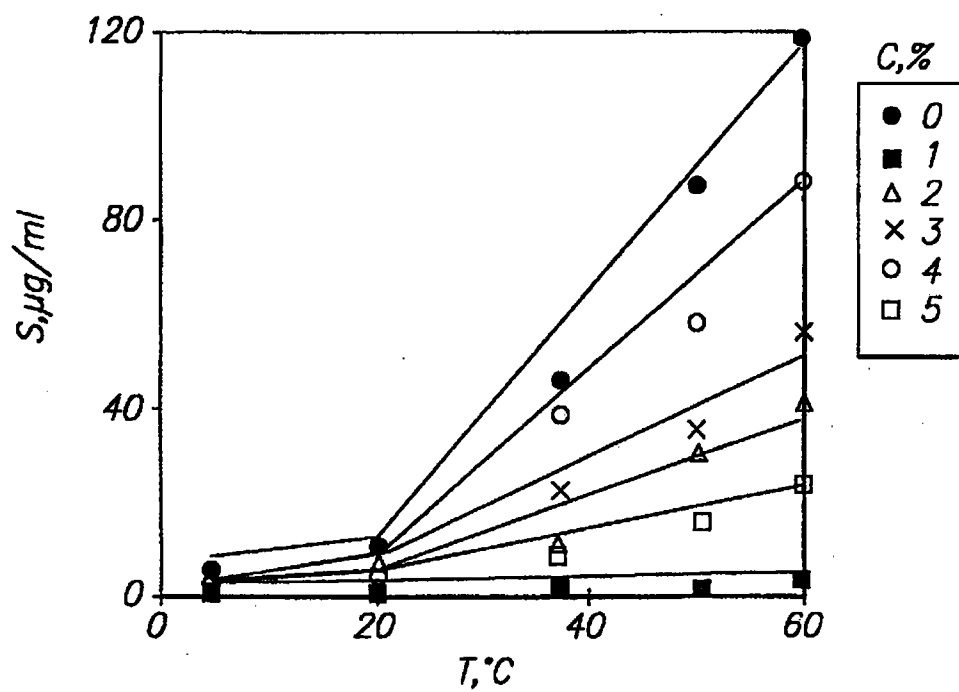


FIG. 22C

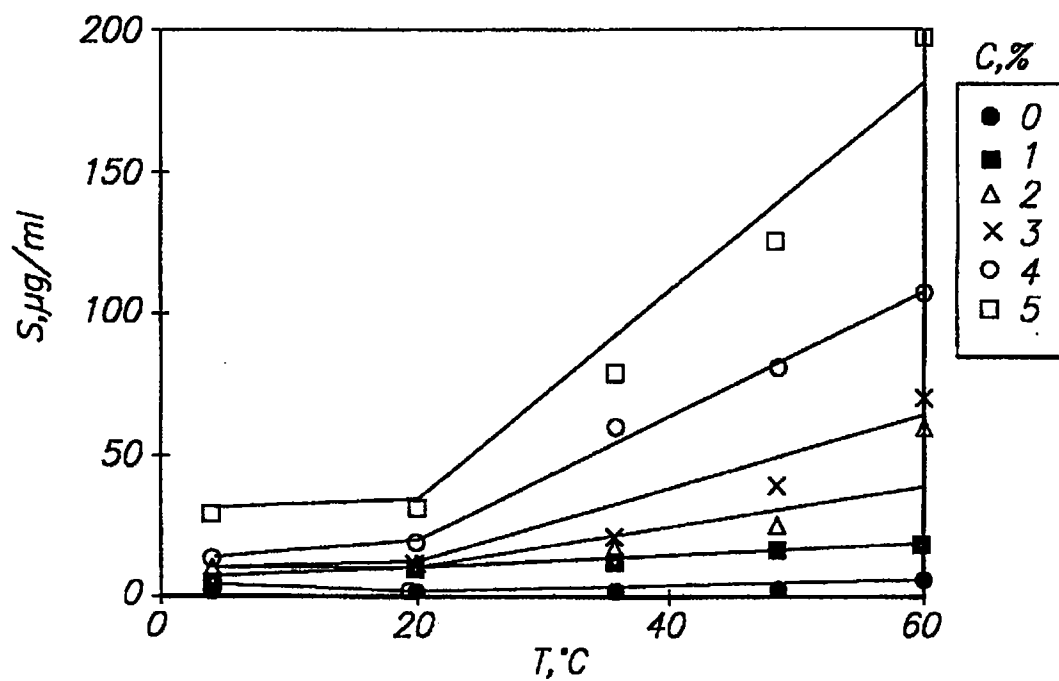


FIG. 22D

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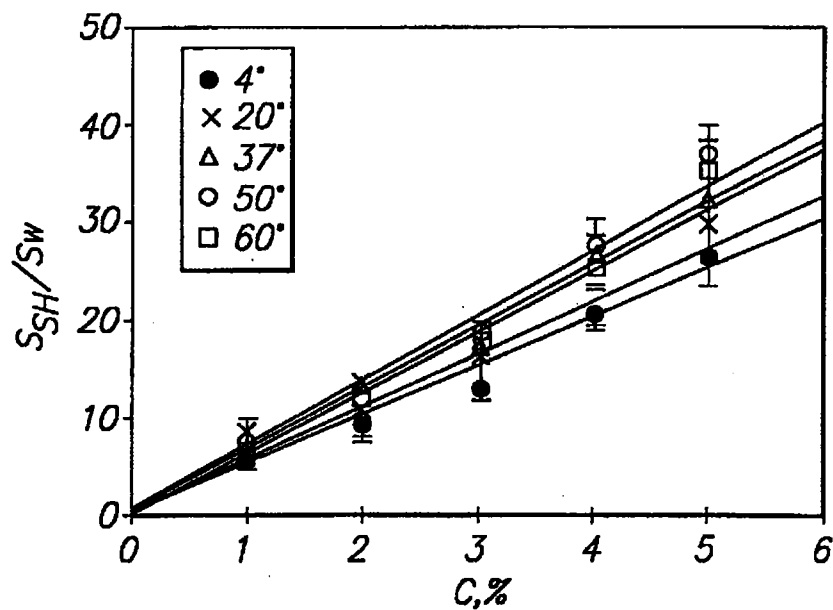


FIG. 23

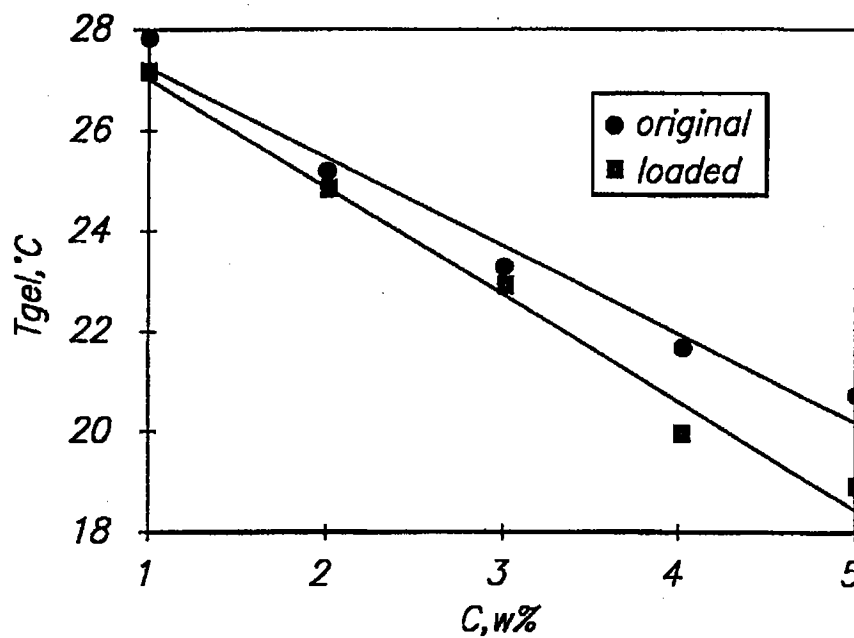


FIG. 24

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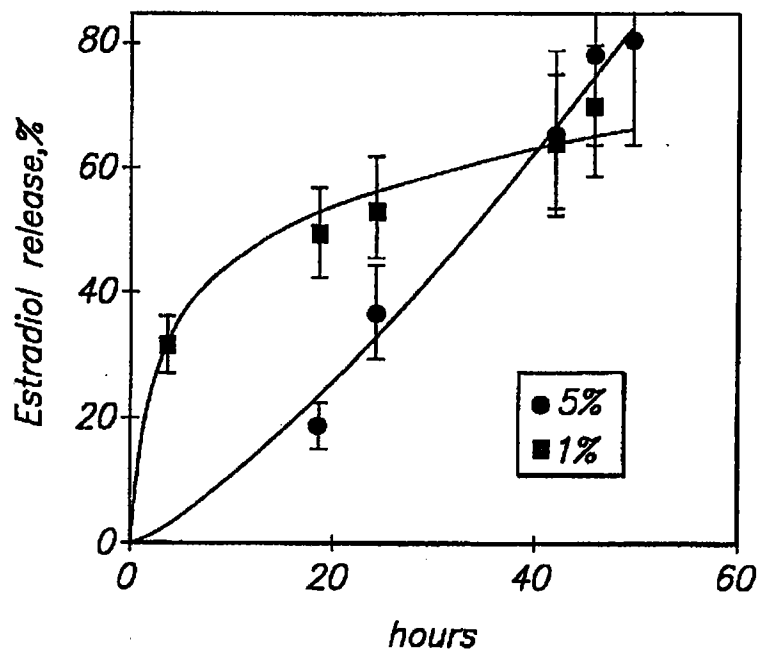


FIG. 25A

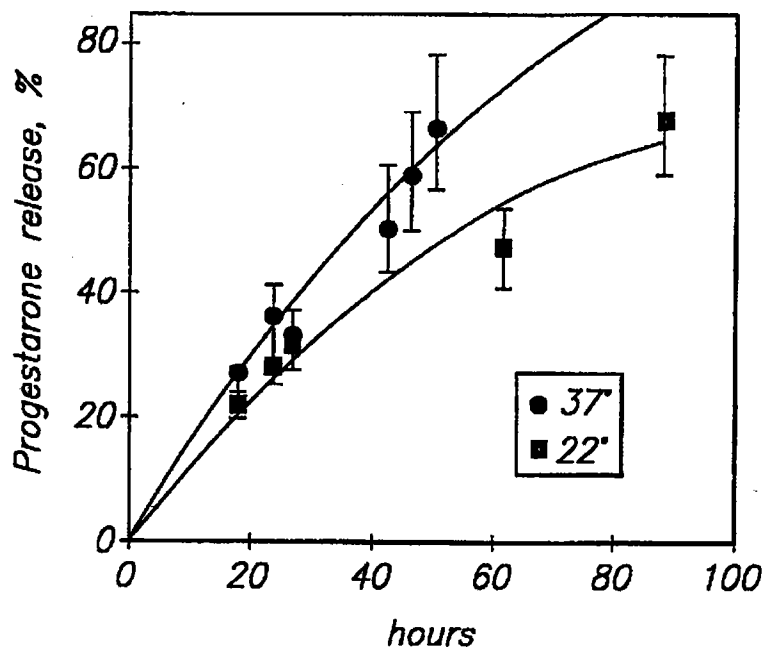


FIG. 25B

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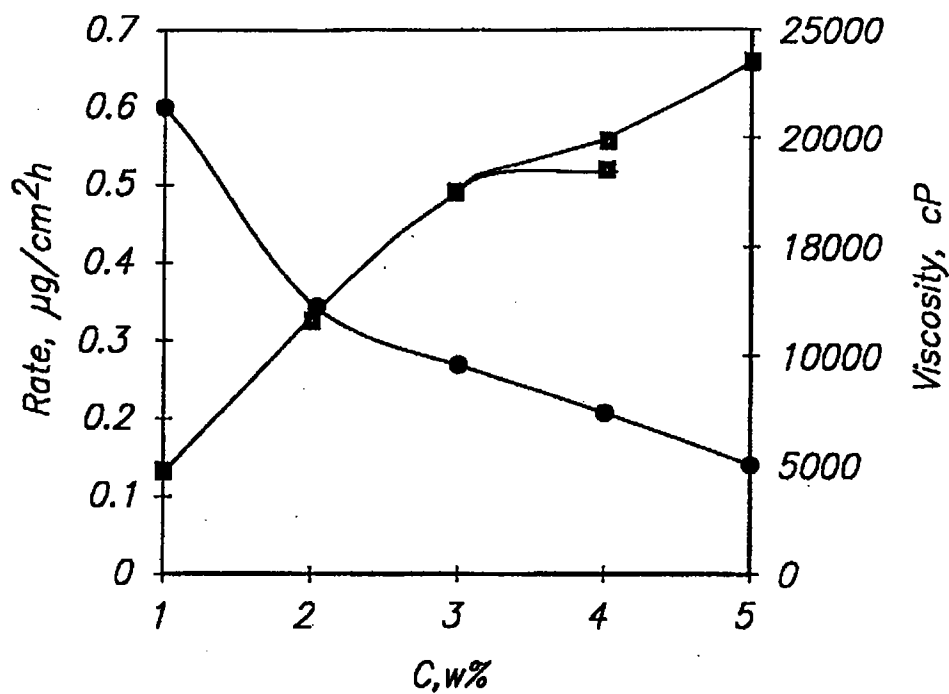


FIG. 26

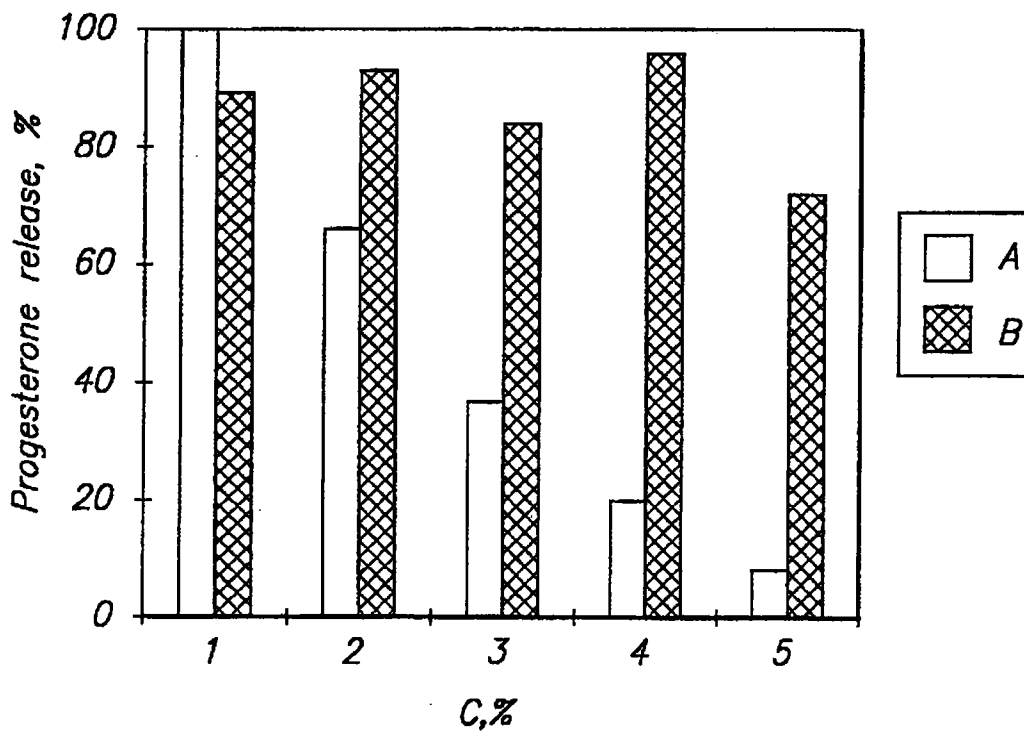
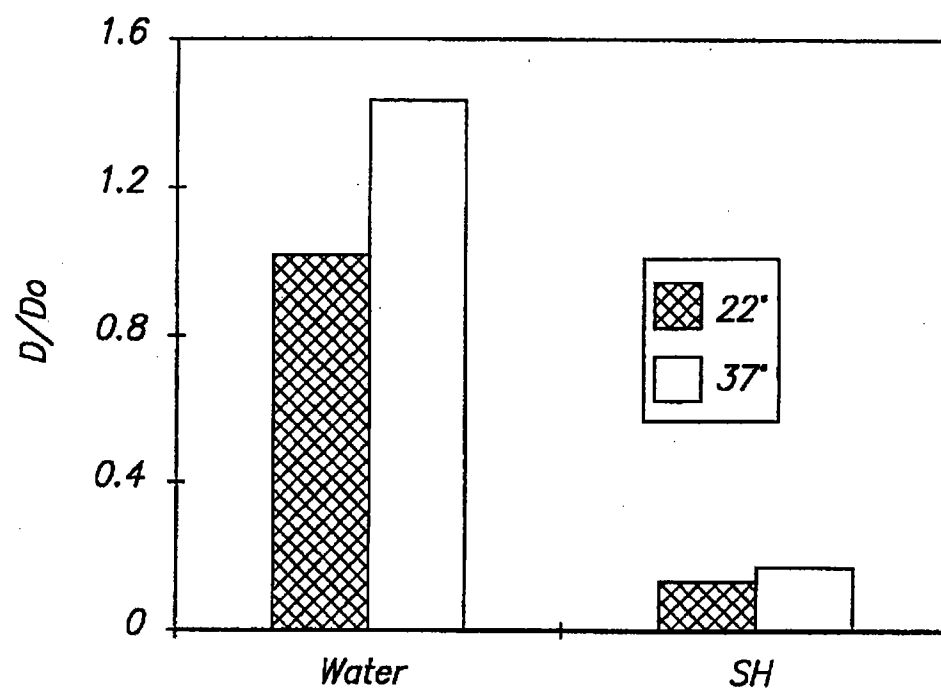


FIG. 27

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**FIG. 28**

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US98/09211

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A61K 7/00, 7/021, 7/025, 7/06, 7/09, 7/16, 7/32, 7/42, 31/74

US CL :Please See Extra Sheet

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/49, 59, 63, 64, 65, 70.1, 70.2, 60.7, 78.02, 78.08, 400, 401, 405

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS: COSMETIC, POLYACRYLIC ACID, POLYMER NETWORK, POLOXAMER

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US 5,662,892 A (BOLICH, JR. et al.) 02 September 1997, see entire document.	1-38
Y	US 5,106,609 A (BOLICH, JR. et al.) 21 April 1992, see entire document.	1-38



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*A* document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*E* earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
*O* document referring to an oral disclosure, use, exhibition or other means	
*P* document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

03 AUGUST 1998

Date of mailing of the international search report

01 SEP 1998

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